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No. 1

ORIGINAL ARTICLES

SOME NEUROLOGICAL CASES WITH EYE MANIFESTATIONS.*

By WALTER BAER WEIDLER, M.D., AND
JAMES LOUIS JOUGHIN, M.D.
NEW YORK CITY

THE following cases which we wish to present before this section were selected because the ophthalmological conditions existing were of great interest and importance from the diagnostic and prognostic viewpoint. They show certain similarities and contrasts which when carefully considered are instructive both to the ophthalmologist and to the neurologist.

In Case No. 1 we find rather typical symptoms of a brain-tumor, *i. e.*, nausea and vomiting, headaches and a long, persistent papilla-œdema or choked disc affecting both eyes, all of the symptoms being relieved when the diagnosis of ethmoiditis was made and properly treated. In Case No. 2 we find neurological symptoms referable to a spinal cord lesion extending over a period of a year, associated with retro-bulbar neuritis of the left eye, followed by atrophy and almost complete blindness.

Case No. 3 shows the neighborhood symptoms associated with a tumor in the region of the pituitary body, *i. e.*, epistaxis, bi-temporal hemi-

anopsia and a paralysis of the third nerve on the left side and almost complete atrophy of the right optic nerve, but with none of the skeletal or glandular changes observed in Case No. 4.

Case No. 4 presents fourteen different symptoms of acromegaly developing over a period of about ten years, exhibiting nearly all of the general skeletal and glandular changes characteristic of that disease, together with neighborhood symptoms, *i. e.*, epistaxis, bi-temporal hemianopsia, and partial blindness of the left eye.

CASE I., H. S., female, aged 11.—Was referred in June, 1915, from the ophthalmological to the neurological department of the Post-Graduate Hospital with the diagnosis of bilateral choked disc. She was admitted to the hospital for observation.

Her family history was negative, and only the essential points in her personal history will be given. She had scarlet fever at 5, mumps and measles at 7 years of age. Since her attack of scarlet fever she has had occasional severe earaches, especially during the winter, accompanied by slight vomiting. After a few hours "a white stringy" discharge would begin from the left ear, and the earache and vomiting would cease. Within a few days the discharge would disappear and she would be again apparently perfectly well. She had on an average three to six attacks of this nature each year.

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

Present Illness.—Previous to the end of March, 1915, she had been in her customary state of health, when she experienced one of the above described attacks which lasted for six days. On the 14th of April she returned from school with a severe frontal headache and vomited, but completely recovered within a day or two. Between the 14th and 30th of April she had five such attacks. On May 8th a mild acute febrile polyarthritides developed, duration one week. About the middle of May the vomiting and headaches began again and occurred every other day. The aural discharge was so abundant that it soiled her dress. No aural pain. Three weeks later the discharge stopped, but the headache and vomiting, though gradually ameliorating, persisted until she entered the hospital.

Status Præsens.—Both the general medical and neurological examinations were entirely negative. The latter, repeated on many occasions, and including a detailed examination of the cranial nerves and the various modalities of sensation, never revealed, except for the fundus findings, any data of diagnostic value. The laboratory reports were equally unproductive. Serum Wassermann negative, blood count normal, urine normal, stool normal, von Pirquet negative. No lumbar puncture was done, as we felt it to be rather unsafe, regarding the nature and localization of the supposed intracranial morbid process. The X-ray report stated: "Signs of marked increase of intracranial pressure are present. Evidence of middle ear disease on the left side with some infiltration of the mastoid cells exists."

After due consideration of the above ensemble of history, physical and laboratory findings, the diagnosis of unlocalizable brain abscess was made. She was referred to the Ear Department for an expression of opinion, where she was examined by Dr. Duncan McPherson. He stated that there existed a slight catarrhal change in the drums and middle ears. Both labyrinths were functioning. He did not think that any existing ear condition could account for the symptoms. The accessory sinuses were examined at this time and a purulent ethmoiditis was demonstrated.

With these new facts in hand we revised our previous diagnosis and considered the papilloedema as a result of the sinusitis. The subsequent clearing up of all symptoms of disease and the complete disappearance of the choked disc under treatment directed to the sinuses confirmed our diagnosis.

The earliest eye records of this case are those of Dr. Martin Cohen, who saw the patient on July 8th, 1915, and reports as follows: Vision in both eyes was 20/20. No other external eye signs given, only the ophthalmoscopic findings:

O.D. There is a marked swelling of the disc, showing 5D of elevation. Veins are engorged and tortuous and the margins of nerve head cannot be made out. Numerous small hemorrhages near the optic nerve head. O.S. The condition about the same as above described. October, 1915, Dr. Davis reports that the appearance of the fundi was unchanged. January 8th, 1916, swelling in O.D. equalled 4 diopters; swelling in O.S. equalled 3 diopters. A slight exophthalmos of the right eye was noted at this time, and the vision was 20/20 in each eye. March 16th, 1916, swelling is decreasing. O.D. 3D and O.S. 2D, vision, however, is not so good as before; O.D. 20/30, O.S. 20/20. The swelling gradually decreasing, and in October, 1916, we find that there is 2 diopters of swelling of each disc. In May, 1917, there is no swelling of either disc and the vision in each eye is again normal.

I first saw the case after the eyes returned to normal, and my examination at that time revealed the following: Vision: O.D. 15/15?? O.S. 15/20?? and refraction under homatropin shows a simple hypermetropia in each eye; O.D.+2.50 sp. 15/15; O.S.+2.00 sp. 15/20. An ophthalmoscopic study of the eye grounds:

O.D. Media clear; disc is oval, 7x8 mm. long, axis 90°; edges are blurred and indistinct, with considerable absorption of the choroidal pigment about the disc, which is more marked on the temporal side. This is evidently a degenerative change in the choroid due to inflammatory oedema and extravasation at the time of papillitis. The disc is pale and white, and more marked on the nasal side. The central funnel of the nerve is blocked and the vessels on the disc show the characteristic white lines following a papillitis. The veins and arteries are of normal size.

O.S. Media clear; disc is oval, 7x8 mm. long, axis 105°; the edges of the disc are blurred. Disc is pale, but not so marked as in the right eye; veins and arteries normal in size.

The fields taken at this time show a slight concentric contraction, more marked for red and green. The right field shows a greater degree of contraction and irregularity of outline. No scotoma was demonstrated.

Referring to the notes of Dr. McPherson, who made the nose and throat examination and treated the case by the suction method, we wish to quote: "Treatment was continued three times weekly for three months, and then twice a week for four or five months. A point to be noted in this case was the entire absence of any subjective symptoms that drew her attention to the sinuses or the nose, but these patients often deny the presence of discharge, blocking, or other symptoms that one would expect to be present."

I believe that it is just this type of sinus involvement that we should be the most careful to search out, because in the cases of sinusitis

with free discharge there are usually no ocular or cerebral complications. It is in the cases where inflammation is usually of a very low grade, with little or no muco-purulent discharge, that we find papillitis and retro-bulbar neuritis.

CASE II., R. C., female, aged 27:—When she first came under observation at the Neurological Institute in September, 1918, she complained of:

1. Inability to see well with the left eye.
2. Difficulty in walking.
3. Attacks of pain beginning in the right leg below the knee and radiating upward to the left chest.

These symptoms were of six months' duration, except the third, which was of nine months' duration.

Personal History.—She was well until her marriage in 1917. During her first (and only) pregnancy in the latter part of 1917 she suffered from a severe burning sensation in the left chest for which she was repeatedly cupped with but little benefit. In January, 1918, during the seventh month of pregnancy occurred a premature delivery, crossed birth and prolapsed cord. The child was born dead.

In February, following her confinement and immediately subsequent to exposure to inclement weather, she developed sore throat, headache, pain supraorbitally and in both eyes, chills and fever. A few hours after the onset of these symptoms she saw flashes of colored light in both eyes, green, blue and red "explosions," as she phrased it. Her legs became somewhat weak, so that it was difficult for her to walk alone, and she complained of numbness and tingling in these parts. Within a few days she was well again, except for impaired acuity of vision affecting the left eye.

In June, 1918, four months after the first attack, she "caught another cold," with febrile reaction. The burning sensation in the left chest that had disturbed her during pregnancy returned. There was no special exaggeration of the eye symptoms. Her legs again became affected, and within four days they were so completely paralyzed that she could not raise either member from the bed or even move her toes. Some degree of sensory loss existed from the lower thoracic region downward. A double Babinski and double ankle clonus were present. Retention of urine was marked, and for some weeks catheterization was daily resorted to. Since that time her neurological condition has greatly improved. The sensory paralysis has completely gone, the motor largely cleared up. When first seen by us she was able to walk around the ward, although with considerable difficulty.

Status Præsens (September, 1918). The patient is emaciated and quite feeble, appearing as though she had recently been ill. The gait is uncertain, and when standing in the Romberg

position she sways markedly. No definite paralysis exists of any member of the body, though the legs present undoubtedly weakened power. No muscular atrophy. There is no true inco-ordination, but some uncertainty is evident in movements of the legs due undoubtedly to the muscular weakness. No hypertonus or hypotonus of the extremities.

All tendon reflexes of the body are markedly exaggerated. A pronounced knee clonus is present. No ankle clonus, and no Babinski. Cutaneous reflexes are lacking on the left, doubtful on the right. These findings indicated involvement of the pyramidal tracts.

Cranial nerves were normal except the left optic nerve.

Sphincters and special senses, except vision, normal.

An area of impaired sensation to touch and pain was found on the left side of the thorax roughly corresponding to the area in which she complained of the severe burning pain.

Her condition at this date (April, 1919) is practically as outlined above, although locomotion is much better than when she first came under our observation, and the burning pain in the side has been replaced by a severe pain of similar character, "exploding" from the region of the coccyx and radiating in all directions.

X-rays of skull, thorax, lumbar and sacral spines were negative. All laboratory examinations were negative, including repeated lumbar punctures, one of which was done after a provocative dose of salvarsan had been administered. The sinuses and throat were negative.

Many consultants were vainly called in, in an endeavor to ascertain the cause of the severe paroxysmal pains which racked her at intervals during the day and night. We do not yet know the nature of these attacks, or whether they are related in any way to the neurological picture she presents.

We interpret the neurological aspect of this case as one of true myelitis, that is, myelitis due to an acute infectious process (tonsillitis) occurring elsewhere in the body and to which the cord changes are secondary. Such a condition is uncommon. The first symptoms indicative of such a lesion developed within twenty-four to forty-eight hours after the patient became febrile, and with a second febrile attack the spinal cord obviously a *locus minoræ resistentæ* became more profoundly affected and symptoms of an acute transverse destruction of tissue developed. The subsequent course with partial recovery is what is very often met with in such conditions and from every aspect this diagnosis is the only satisfactory one that can be made.

In April, 1918, the patient was admitted to Knapp's Hospital, at which time a diagnosis of retro-bulbar neuritis of the left eye was made by Drs. Knapp and Torok, but they were unable

to find any cause for the inflammation. Treatment was of no avail and a field taken at the time shows bi-temporal hemianopsia. About four months later she was admitted to the Beth-Israel Hospital, and Dr. Torok tells me that the condition in the left eye was about the same, perhaps a trifle worse, with a slight reduction in vision. I first saw her in October, 1918, at which time the vision in O.D. was 20/20, in O.S. fingers at 3 feet eccentrically, with a large absolute central scotoma. The field and fundus in O.D. were normal. The atrophic change in O.S. has been progressive, and at the present time a thorough examination of the eyes reveals O.D. pupil 5 mm. reacts promptly to light, accommodations and convergence. Extra-ocular movements and corneal sensations are normal, with a slight divergence of O.S. but no diplopia or nystagmus is present.

Ophthalmoscopic Examinations.—O.D. media is clear, disc is oval, 7x8 long, axis 90°. Scleral ring all around broadest out, vessels are normal in size and color, long axis 90°. O.S. media is clear, disc is oval, long axis 90°. Scleral ring all around, edges are clear-cut and well defined, and the lamina cribrosa is plainly seen. Disc is pale and white throughout, more marked on the temporal side. Veins and arteries are normal in size and color. Vessels long axis 90°. The atrophic picture of the disc is more like that seen after myelitis and multiple sclerosis than that seen after a sinusitis. The field in O.D. is normal, in O.S. concentrically contracted without any scotoma demonstrable.

CASE III., L. W., aged 45.—Was first seen in July, 1915. Her complaints enumerated in the order of their development were:

1. Failing vision.
2. Occasional diplopia.
3. Bi-temporal headaches.
4. Falling of the eyelid.

These symptoms were of two years' duration and were slowly progressive.

Family History.—Negative.

Personal History.—She had a severe fall from a horse in 1913, and shortly after her ocular symptoms were first noted. These two events are probably entirely unrelated. Catamenia for the last two years. History of very severe epistaxis of some years' duration. She entered the hospital on July 28th, 1915, for observation.

Status Præsens.—The patient is a well-nourished woman of normal appearance except for her ocular defects. The skin and its appendages are in every way normal. No hyper-functioning or hypo-functioning of the sweat glands. No skeletal deformities whatsoever, and no spacing of the teeth. Weight before onset of illness 170 lbs.; weight today 162 lbs. Blood pressure systolic 135, diastolic 90, pulse 76, regular; temperature 99. No cardio-renal or vascular disturbances.

Her neurological examination reveals few deviations from the normal. Station, gait, sensation, speech, sphincters, are all normal. Cranial nerves intact, except for a complete paralysis of all the extrinsic muscles supplied by



CASE No. 3.—TUMOR IN THE REGION OF THE PITUITARY BODY, WITHOUT SKELETAL CHANGES.

the left third nerve. Reflexes normal, except for absence of the ankle jerks which cannot be brought out by reinforcement.

Laboratory Reports.—Blood count, urine and stool normal. Blood Wassermann negative. Lumbar puncture negative. Three hundred grams of glucose were ingested without producing glycosuria. X-ray pictures taken at this time and subsequently showed some slight enlargement of the sella turcica, double contour to the sellar floor with apparent thickening of the anterior and posterior clinoid processes.

The diagnosis of hypophyseal lesion was made based upon the bi-temporal headache, the third nerve paralysis and, above all, on an easily demonstrated bi-temporal hemianopsia. A sellar decompression was done in February, 1916, by Dr. Charles Elsberg. The sphenoidal sinuses were widely opened. The sellar floor which was very thin was removed and the dura incised. Considerable fluid escaped, and the condition was considered as probably one of pituitary cyst. Recovery from the operation was uncomplicated. Within a week there was considerable improvement in her symptomatology and she left the hospital shortly after, not being seen again until a period of eight months had elapsed. She returned with the same complaint of failure of vision, and on October 22d, and again on October 30th, 1916, the sphenoidal opening was enlarged by the removal of small portions of bone, with the result that a solid tumor mass was easily palpable in the aperture. A small portion of this mass was curetted out, and on examination it proved to be a typical adenomatous struma. On December 21st, 1916, a similar surgical intervention was attempted, resulting in a rather severe reaction, but within a few days the patient was again as well as ever. Subsequent to these operative procedures the neighborhood symptoms cleared up to a remarkable extent and this improvement persisted for some months. Unfortunately, the amelioration was only temporary and it was deemed inadvisable to operate again.

This case, in spite of the pathologically proved involvement of the hypophysis, presents absolutely no trophic signs of those glandular disturbances which are so markedly in evidence in the succeeding case, and the only metabolic abnormality which from the laboratory standpoint can be demonstrated is an increased tolerance for carbohydrates. The neighborhood symptoms (those symptoms due to pressure upon the adjacent structures by the advancing struma) are, on the contrary, strikingly evident. Some (the visual disturbances and the oculo-motor paralysis), have persisted throughout the course of the disease, and others (the epistaxis and bi-temporal headaches), after disturbing the patient for a varying period, have now disappeared. These are the symptoms which we have been unsuccessfully endeavoring to alleviate, and the

probability, under these circumstances, is that we are dealing with a struma formation which is slowly but steadily increasing its dimensions.

I first saw this case after an operation had been performed through nasal-sphenoidal route for the removal of a growth which was making pressure upon the chiasm. O.D. pupil 2.5 mm., iris blue and reacts to light, accommodations and convergence. The tension, corneal sensation and extra ocular movements were all normal. O.S. pupil 5.5 mm., but does not react to light and very slightly to accommodation and convergence, probably due to the extra-ocular paralysis. There is some slight swelling, partial ptosis, and some twitching of the upper lid. There is complete paralysis of the superior, internal and inferior recti and the inferior oblique muscles. Vision: O.D. 20/200, O.S. 20/200, eccentrically 20/70. Correction with glasses:

O.D.+1. sp.=+1.50 cly. ax. 180=20/100.

O.S.+0.50 sp.=+1.50 cly. ax. 90=20/70.

Ophthalmoscopic Examination.—O.D. The media are clear; disc oval, 7x8 long, axis 90°; scleral ring all around. The disc shows a pallor limited to the temporal half. The lamina cribrosa is plainly seen and the edges of disc are clearly cut. The capillaries over the nasal half of the disc are plainly seen, and the arteries and veins are normal in size and color. Vessels long axis 90°. O.S.: The media are clear and the disc is oval, long axis 90°. Scleral ring all around, and the lamina cribrosa is plainly seen. The outer half of disc is not so pale as O.D., but a beginning pallor is undoubtedly present. Vessels long axis 105°. The fields show complete bi-temporal hemianopsia. About six months later the vision was O.D. 3/200, O.S. 20/50 with correction, and little or no additional change observable in the fundus.

After the last operation, December 21st, 1916, there was some improvement of the ptosis, but the condition of the extra-ocular muscles was unchanged and the pupil is still inactive. The vision is gradually decreasing in both eyes. Radium treatment was started September 18th, 1917, and consisted in placing a small capsule in the site of the operative field in the sphenoid. There was considerable pain at times in the eyes and head in the neighborhood of the sphenoid bone. The vision in O.D. is now reduced to two feet eccentrically to the left.

The last examination was made March 28th, 1919, at which time the vision in O.D. was reduced to hand motions and in O.S. with correction vision was 15/25. The field in O.S. at this time showed a complete hemianopsia, not involving the central point of fixation and with no reduction of the nasal portion of the field.

CASE IV., female, aged 37.—Her first symptoms date from the age of 29, and the clinical picture has gradually evolved in its entirety



CASE No. 4.—ACROMEGALY—SHOWING GREAT DEGREE OF SKELETAL CHANGES OF FACE AND HANDS.

until today it may be said to be complete in practically all details.

Family History.—Negative.

Personal History.—The patient has had twelve induced miscarriages. One year before the onset of the previous symptoms the patient had a febrile attack, nature unknown, accompanied by severe headaches and pain felt deeply within the head and in the center line (pituitary).

Complaints.—These are numerous, and they will be divided from the standpoint of the chronological development into four groups, according to the period when the patient first became aware of the symptoms.

Group I.—Symptoms developing between eight and six years ago:

1. Pain in the hands and feet.
2. Enlargement of bones and soft tissues of the body, especially of the face, hands and feet. Protrusion of the lower jaw.
3. Severe frontal headaches, accompanied by dizziness and nausea.
4. Occasional nose-bleed, sometimes very severe.

5. Excessive sweating, especially nocturnal.

Group II.—Symptoms developing about four years ago:

6. Secretion of the "milk" in the breasts.
7. Diplopia.
8. Increase of weight.
9. Pigmentation of skin of face and dryness and coarseness of the hair.
10. Cessation of the menses and anaphrodisia.

11. Constant drowsiness and frequent yawning.

Group III. Symptoms developing about two years ago:

12. Failure of vision.

Group IV.—Symptoms originating within the last few months:

13. Ticking noise in left ear and inability to hear well.
14. Pain in left cheek, left eye and supra-orbitally.

We know these symptoms developed approximately in the manner outlined, the first group, especially the skeletal changes, being characteristic in their gross outlines of hyperfunction of the anterior lobe of the pituitary body; the second group being characteristic of hypofunction of the posterior lobe, and the third and fourth groups, and here and there in the first and second groups, we find symptoms which indicate that some abnormal pressure is being made on the structures at the base of the brain.

This order of development of the glandular symptoms is what we often meet with in conditions of this nature, and it may be safely said that patients who are followed for some years and who show trophic disturbances due to pars posterior hypofunction are rare.

The order of development of the neighborhood symptoms is always uncertain. As the previous patient so clearly showed, such symptoms may exist for years and, in fact, till death, and signs of glandular disturbance never supervene;

or glandular symptoms may be present for years and neighborhood symptoms be altogether lacking; or a third alternative, glandular and neighborhood symptoms may both be present with the order of their development entirely irregular. Here, as in most cases of hypophyseal struma, by far the most important of all the neighborhood symptoms are those resulting from pressure upon the optic nerves, chiasm or tracts.

Status Praesens.—A stockily built, somewhat obese, woman weighing about 182 lbs. There exist marked skeletal deformities (overgrowth) most noticeable in the face, and characteristic of acromegaly. The skin is thickened and somewhat greasy but does not pit. Hair of head decidedly coarse, abundant, very dry and not easily pulled out. Some diffuse pigmentation of the face is evident, only markedly noticeable when comparison is made with skin of the trunk. No hypertrichosis. Distribution of hair of body normal except that it grows low in forehead and temples.

Abdominal and thoracic viscera normal. No cardio-vascular changes.

Neurological examination negative, except that she does not hear as well with the left ear as with the right.

Blood pressure, systolic 90°, diastolic 65°. Pulse, respiration, temperature normal.

Laboratory Reports.—Carbohydrate tolerance; glucose up to 500 grams has been administered without resultant glycosuria. Urine: Some degree of polyuria present. Examination is negative except for a faint trace of albumen and an occasional glandular cast. Blood: Wassermann negative; blood sugar 1 per cent, urea 14.4 milligrams per 100 c.c. All these are normal findings.

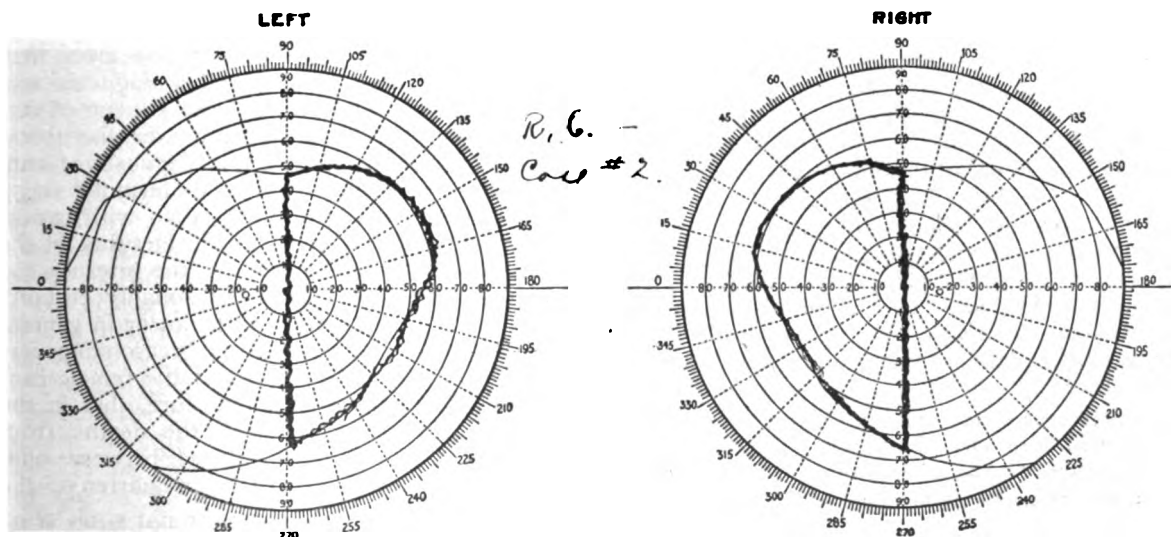
X-ray of head showed thickening of the bones of the skull. There is protrusion of the lower jaw. Frontal sinuses are very prominent and the sella turcica is markedly enlarged. The com-

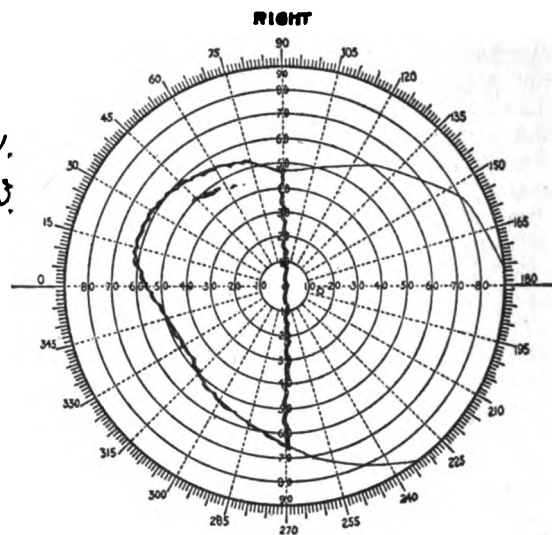
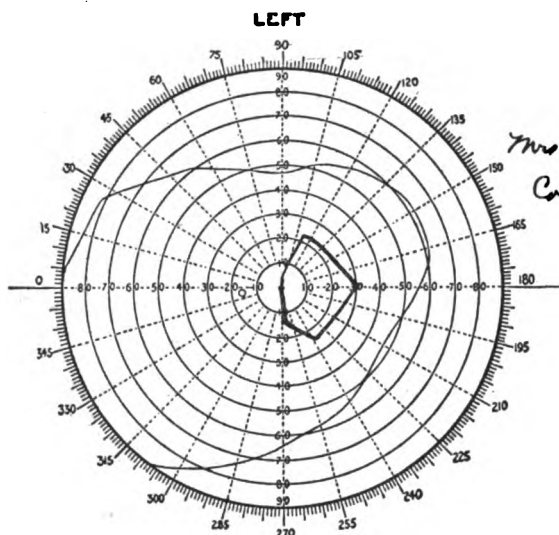
ment of the roentgenographer was that we have here a "typically acromegalic skull."

To summarize: We had eight years ago evidence of markedly disturbed function of the anterior lobe of the pituitary body, as evidenced in the coarseness of the hair, the excessive sweating, and most of all in the development of the acromegalic picture. This hyperfunction *still persists*, as at this time her acromegalic deformities are exaggerating as determined by comparative measurements. Four years ago were noted increase of weight, amenorrhea, anaphrodisia, excessive drowsiness, pigmentation, —all symptoms identified with hypofunction of the posterior lobe. On physical examination we find low blood pressure and a tremendous increase in carbohydrate tolerance; signs of insufficiency of this lobe, so that we have at this time (1919) a picture in which both elements of the hypophysis betray their physiological disequilibrium by very definite syndromes. It is altogether probable that the posterior lobe symptomatology will become more and more predominant as the years elapse. The striking contrast between these two patients is not easily forgotten when they are thus closely compared.

The examination of patient's eyes gave the following: O. 2 pupils 3.5 mm., iris brown and reacts to light, accommodation and convergence. The tension, corneal sensation and extra-ocular movements are all normal. Vision: O.D. 20/70 O.S. 20/30 reading the last letter of each line on the right hand of the chart, showing an involvement of the temporal field.

Ophthalmoscopic Findings.—O.D. Media clear; disc is oval, 7x8, long axis 105°; scleral ring all around broadest out with some atrophic changes taking place in the choroid. Vessels are normal in size and color; nerve head shows a pallor of the maculo-papillar portion with some atrophic changes in the nasal portion. The disc shows a





slight saucer-like excavation and the lamina-cribrosa is plainly seen, vessels long axis 105° . O.S. Media clear; disc is oval, 7×8 , long axis 90° ; scleral ring all round broadest out with some atrophic changes in choroid adjoining disc. Vessels are normal in size and color. There is a more general pallor of the disc, although loss of vision is greatly out of proportion to the amount of visible atrophy. Vessels long axis 75° .

The fields taken at this time show a complete temporal hemianopsia of the left eye and a contraction of the right field with complete obliteration of the inferior temporal sector. About two months later I found the vision in O.D. 20/200, O.S. 20/40, and correction with glasses gave O.D. +2.00 sp. 20/30 reading left side of chart, O.S. +1.00 sp. 20/40 right side of chart. Operation was urged at this time with the warning that her vision would gradually decrease until she would probably be blind in both eyes, but she steadfastly refused.

About ten months later the vision in O.D. 15/20, O.S. fingers at 3 feet. The field in the right eye shows additional contraction, but a central visual field is still retained. In the left eye the field is greatly reduced when tested with hand movements. The ophthalmoscopic examination does not show any great advance of atrophy and whitening of the nerve heads. This is usual in all of the cases of acromegaly I have examined. We may have complete bi-temporal hemianopsia, involving the central visual field as well, without the advanced atrophy that one would expect to see.

Patient has been operated upon through the nasal route by Dr. H. Janeway, and this was followed by the use of radium, but the treatment does not seem to have checked the progress of the disease.

THE TREATMENT OF CANCER OF THE UTERUS.*

By HOWARD C. TAYLOR, M.D.
NEW YORK CITY.

IN order to show the prevalence of cancer of the uterus in the State of New York and the importance of greater care in the early recognition and treatment of the disease, reference will be made to a few statistics taken from the report of the United States Bureau of the Census on Mortality from Cancer and Other Malignant Tumors in the Registration Area of the United States for the Year 1914. In the State of New York, in the year 1914, there were recorded 1,120 deaths from cancer of the uterus, of which number the diagnosis was "reasonably certain" in 1,115 cases. In the same year there were 5,339 recorded deaths of females from all forms of cancer in the State of New York, of which the diagnosis was "reasonably certain" in 3,298 cases. That is, about one-fifth of all the deaths from cancer among women recorded in this State in that year and more than one-third of those in which the diagnosis was "reasonably certain," were from cancer of the uterus. As a matter of fact, however, the uterus is an accessible organ and the diagnosis of cancer of the uterus, especially in its terminal stage, is made with greater accuracy than with cancer in general. This is shown by the fact that of the 1,120 deaths from cancer of the uterus, the diagnosis was reported as "reasonably certain" in all but five cases, while with cancer in general the diagnosis was reported as "reasonably certain" in only about two-thirds of the female cancer deaths. It is evident, therefore, that in the State of New York in 1914, the deaths from cancer of the uterus constituted between one-third and one-fifth, or about one-quarter of the

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recorded cancer deaths. This corresponds to the percentage usually stated.

These statistics show only the number of recorded deaths from cancer of the uterus, and it is not easy to get reliable statistics in regard to the number of cases that are cured. The number is undoubtedly small. A few years ago, through the kindness of Dr. Guilfooy of the Bureau of Vital Statistics in New York, I investigated the treatment given to a series of cases that died of cancer of the uterus and I found that only about 20 per cent. had had any operation or other treatment that offered any real hope of a permanent cure. It is probable that less than 10 per cent. of the cases that are so treated are permanently cured. This would mean that less than 2 per cent. of the cases of cancer of the uterus are permanently cured.

We may therefore estimate that in the State of New York there are annually over 1,100 deaths from cancer of the uterus, that these cases constitute one-quarter of the female deaths, that about one woman in thirty-two past the age of forty dies of cancer of the uterus and that if a woman is so unfortunate as to be a victim of this disease she has about one chance in fifty of escaping death from it.

This is certainly a bad showing and it is my belief that by proper use of our knowledge of cancer and of the means for treating it the figures can be greatly improved. We do not know the cause of cancer, but we do know a great deal about it. We can cure many diseases the cause of which is unknown, and it is by no means certain that the discovery of the cause of cancer will change our treatment of it.

The treatment of cancer of the uterus will be considered under four headings:

- I. Publicity and Education.
- II. Prophylaxis.
- III. Treatment of Operable Cases.
- IV. Treatment of Inoperable Cases.

I. PUBLICITY AND EDUCATION.

A few years ago the American Society for the Control of Cancer was organized for the purpose of educating the laity regarding cancer in general. People at large have an entirely too pessimistic idea regarding cancer. It has been the desire of the American Society for the Control of Cancer to change this pessimistic view and also to teach a few of the essential symptoms of cancer of the different organs at an early stage. It is teaching the public that cancer is not contagious, that practically it is not hereditary and that in many cases it is curable, but curable only if taken in its early stage.

Specifically in regard to cancer of the uterus, women are taught only two symptoms, namely, that (1) any increase in the menstruation or (2) any change in the discharge, particularly after

the age of thirty-five, demands attention from a competent physician and that the only way a physician can determine whether or not a malignant condition exists to account for these symptoms is by direct examination. Women are taught that if they notice either of these two symptoms they should go at once to a physician and should not be satisfied if the physician gives any treatment without first making a proper examination.

There is here a responsibility for the patient and a responsibility for the physician. The patient is the only one who can first discover any change in the menstruation or any change in the discharge, but it is not possible for the patient to determine the cause of either. The responsibility of the physician is to determine the cause of the change in the menstruation or discharge and to institute the proper treatment, whether the cause is a malignant or non-malignant one. The cervix, where cancer is the most common, can be directly palpated and can be brought under direct sight and usually nothing more is necessary to determine whether a cancer of the cervix is present or not; rarely it may be necessary to remove a piece for microscopic examination. It is more difficult to determine the condition of the endometrium and frequently a curettage is necessary to determine this point. Two purposes, however, are usually served by the curetting; one, the determination whether or not the bleeding is due to a malignant condition, and the other, to cure the irregular bleeding if due to a non-malignant cause.

The statement that every woman fears cancer is not far from the exact truth, and intelligent women today are beginning to know the significance of irregular bleeding and discharge. The time is not distant when the physician who makes an error in the diagnosis of a malignant condition, which leads to the death of the patient at the end of one, two or three years, will be held as responsible as the physician who makes an error in the diagnosis of appendicitis, which leads to death in one, two or three days. There is a difference in time, but there should be no difference in the responsibility.

There is nothing that would do more to reduce the mortality from cancer of the uterus in the State of New York than to carry to the women of every community the significance of the two symptoms mentioned and to the physician his responsibility if he neglects to give to a patient complaining of these symptoms the benefit of proper examination and treatment.

II. *Prophylaxis*.—It may be strange to speak of the prophylaxis of cancer of the uterus, but it is a correct expression. There is no doubt that cancer of the uterus can be prevented. Statistics show that cancer of the cervix is rare in women who have had neither children nor miscarriages,

that is, where there has been no injury to the cervix. We know from many examples that cancer in other parts of the body is associated with chronic irritation. Cancer frequently develops in a scar that is subject to constant irritation and in an unhealed sore, but is infrequent in a scar that is well healed and is not irritated. These facts proximate the cause of cancer of the cervix and indicate the way in which it can be prevented. The unhealed or eroded cervix should be converted into a healed cervix without erosions, preferably by amputation.

The age of the patient and the nature and extent of the erosions must, of course, be considered in determining the operation. In the early child-bearing period the liability to cancer is less than at a later period. A condition of the cervix that would indicate an operation in a woman of forty-five years would not necessarily indicate an operation in a woman of twenty-five years.

Most cases of unhealed lacerations or erosions of the cervix cause symptoms. Most patients would be improved in their local condition if these lacerations or erosions were properly repaired. There is, then, a double reason for advising operation on all cases of diseased cervixes in women who have finished bearing children. The patient will be in better health on account of the cervical repair and the possibility of cancer of the cervix is greatly diminished. It is easier to prevent cancer of the cervix than to cure it. The cure of diseased cervixes, that is, the removal of a source of constant irritation, is a second and important factor in the reduction of the mortality from cancer of the uterus.

III. Treatment of Operable Cases.—Our definition of an operable case is frequently changed. A few years ago, before radium was in common use, many cases were considered operable that would now be placed in the inoperable class. Formerly, we knew that if a case was not operated on there was no hope; therefore, we were led to operate on many cases where the chance of cure was comparatively small and the risk of the operation correspondingly great. With the use of radium, however, the case is not necessarily hopeless without operation, and even if not permanently cured life can be prolonged and the patient given great comfort by its use.

The use of radium, however, has developed another class of cases, that is, the cases which were inoperable before treatment but as a result of the use of radium become operable.

In the treatment of operable cases, that is, cases in which the growth is limited to the uterus, with possibly a limited superficial involvement of the vaginal walls, I believe that a combination of radium and operation offers the greatest hope of a permanent cure. It is my

custom in such cases to make an application of radium, usually one hundred milligrams for twenty-four hours, and then after a few days, usually less than a week, to allow the possible reaction from the radium to subside, to do such abdominal hysterectomy as the case indicates. If the case is favorable, I would do a radical abdominal hysterectomy with the isolation of the ureters and the removal of the pelvic connective tissue as far as possible. If the case is more difficult on account of a thick abdominal wall or any concurrent constitutional disease, I would be satisfied with a simple hysterectomy.

It has been stated that a hysterectomy after the use of radium is associated with greater difficulty on account of increased liability to hemorrhage and to the absence of the usual plans of cleavage. It has not been my experience that the increased difficulty is sufficient to contraindicate an operation following the use of radium. There may be some increased bleeding, but in no case has this been difficult to control. There is usually some edema about the bladder fold and at the bases of the broad ligaments, but this has never interfered materially with the operation in any of my cases nor with the subsequent healing of the wound. In one of my cases the application of radium was followed by a marked febrile reaction and the operation was not performed until a month after the use of radium. However, the operation was not associated with special difficulty. Following the operation and previous to the patient's discharge from the hospital, that is, at the end of three or four weeks, an application of radium to the top of the vagina is made. I have followed this method in about twelve cases and have lost none of the cases from the operation.

IV. Treatment of Inoperable Cases.—There are, of course, cases which are so advanced that it would be folly to do anything other than to use morphine for the relief of pain and discomfort and proper douches for cleanliness. In these cases the possibility of causing irritation to the bladder or rectum, associated with additional discomfort, is such that the cases are more comfortable without any local applications of radium. Excluding these advanced, hopeless cases, there has been nothing in my experience in the treatment of inoperable cancer of the cervix that has approached the use of radium in its results. It has advantages over the use of the cautery in that it can be applied without an anesthetic, with practically no discomfort to the patient, it requires but a short stay in the hospital, and the results are often striking. I have in mind a case in which I made two applications of radium and at the end of one year there was absolutely no evidence of any malignant condition in or about the uterus. In other cases the ulcerated, malignant mass in the vagina entirely disappears in two or three weeks,

leaving a healed vagina, but the indurated, malignant disease higher in the pelvis still remained.

The treatment of the inoperable case that has changed into the operable class by the use of radium is open to various opinions. It is determined, I think, by one's general attitude towards malignant conditions. Personally I would be willing to take a considerably increased primary risk if by doing so there is a correspondingly increased chance of a permanent cure. We know that there are some cases which are apparently cured by the use of radium that are not cured and subsequently die of the disease. Theoretically it would seem that some of these cases might have been saved by a hysterectomy. It is my custom, therefore, if the case is a good operable risk, that is, if there is no constitutional contraindication, and the patient is not too fat, to do a simple hysterectomy or a modified radical operation on these cases.

CAUTERY METHODS IN THE TREATMENT OF UTERINE CANCER.*

By VICTOR L. ZIMMERMANN, M.D.
BROOKLYN.

IT is quite natural at the present epoch, when surgery has seemingly reached the zenith of its achievement, and in which further refinement of technic seems almost impossible, that there should be a severe revulsion against any retrograde movement which would transport us back to what has been termed the monstrous and barbarous *ferrum ardens* period of surgery.

It is rare indeed that any methods once abandoned are again taken up and accepted as worthy of further consideration or a new trial. But such an example of return to old methods, with refinements and additions, seems to be had in the acceptance again in the past few years of the use of the cautery and the employment of heat in the treatment of uterine cancer.

In treating this subject I shall assiduously try to avoid the pitfalls which in the past have ensnared cautery and heat enthusiasts, and have even threatened to discredit them, viz., over-sanguine and sweeping postulates for these agents, and refusal to admit efficaciousness in the cure of this disease of any other form of treatment. And in the very beginning let me say that while I have had quite a good deal of experience in the treatment of uterine cancer with the cautery, beginning my apprenticeship under the eyes of the great master, John Byrne, the protagonist of cautery methods, I have neither reached that stage of perfection in its handling, nor acquired that faith in its infallibility, which makes me insensible to its shortcomings and dangers, nor blind to the value of

other agents. I am neither willing in the light of present-day aseptic surgery to agree with Byrne that hysterectomy for cancer is a bloody and foolhardy procedure, nor to subscribe to the declaration of a later enthusiast that vaginal hysterectomy for cancer is only a legalized form of assassination. However, this much is certain, that the history of the development of cautery methods in the treatment of cancer of the uterus had its inception and greatest stimulus in the growing dissatisfaction with the results of radical extirpating operations. Thus Byrne¹ brought his cautery application to the attention of a credulous and critical surgical world by making an unmerciful attack upon vaginal hysterectomy, the then accepted method for the cure of cervical cancer.

When Byrne began his work, what is now known as the radical operation for uterine cancer was in process of evolution. The eyes of surgeons the world over were upon these procedures, and the time seemed at hand when this terrible female scourge was to be vanquished, with the advent of a bold and wide dissection of the parametrium, and the complete removal of the pelvic lymph glands. At the present time when abdominal surgery has seemingly attained close to perfection, the mortality from these operations is still high, but nothing as compared to the frightful rate of primary deaths then accompanying them. As years elapsed it was found that the large majority of the patients who survived the operation were dying of recurrence as before. It was this disappointment which inspired the work of Byrne. His voice has been compared to the voice of the prophet crying out in the wilderness. Today history is repeating itself, but the voice of Byrne is stilled, and only lately has there been heard a faint echo from a few of us who still have some confidence in his early teachings. And we are going forward another step in the trail blazed by him so long ago, when we must admit that the only ray of hope for the curability or alleviation of cancer of the cervix seems to be in the use of radium or cautery or heat. So that what Byrne preached nearly fifty years ago is exactly what the majority of gynecologists are convinced of today, namely, that hysterectomy of whatever kind is a failure in most cases for the cure of cancer of the cervix. I advisedly say in most cases; for if the removal of the entire uterus is done early enough in the disease, just over the border line into malignancy, and the knife cuts well outside the cancer area, then the removal will be curative, no matter what form of extirpation is done. But the real fact is, that not one case in thirty comes to diagnosis or proper operation at this early stage. They are either concealed or self-treated by patent nostrums or quacks, or given local treatment by practitioners who do not realize the nature of the disease by

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

reason of the fact that there is no visible change in the appearance of the cervix. These patients are usually subjected to curettage one or more times, in a vain effort to stop irregular bleeding, roughly dilating the diseased cervix and scraping the cavity of the corpus to control hemorrhage which in reality comes from the cervical canal. They lose sight of the fact that any excess of bleeding during dilatation of the cervix should at once put us on our guard and in itself be looked upon with suspicion. This rough procedure rapidly places them outside the possibility of cure, first by hurrying the malignant overgrowth by inflicted violence, and secondarily by loss of valuable time. In this class of case of adeno-carcinoma beginning in the cervical canal, with general enlargement of the portio vaginalis, at the stage when by far the greatest number of cases are seen by us, I believe we will have a larger percentage of cures by the original high cautery amputation of Byrne, than by any form of extirpation, and by a much reduced primary mortality. In all the vagaries of the discussion as to choice of operation for uterine cancer, there are many factors that make for disagreement and invidious comparison. I may have several cases of epithelioma of the cervix, which remain free from recurrence over the five-year period, following high amputation by the cautery, while my colleague in the same clinic practising vaginal hysterectomy, may have the ill fortune to operate in succession upon the same number of early cases of adeno-carcinoma of the canal, and *his* cases have a rapid recurrence and metastasis. But we have had two entirely different forms of cancer, one lightning-like in its malignancy, the other tending almost to chronicity; likewise, constitutional factors tending to increase immunity of a higher degree in one subject, while giving a lessened resistance in another. These two factors of type of malignancy and degrees of constitutional resistance also play a serious part in the development of metastases.

I think we all agree that the difficult problems of the uterine cancer question are encountered in growths in the cervical portion. Corporeal cancer does not present any difficulties to compare with those involving the lower blood-supplying region. Cancer of the body is of slow growth, tends to localization and delay in metastasis, while glandular growths near the junction of cervix and body are insidious in their onset, difficult of early diagnosis, rapid in their spread to vital organs and deadly in their metastases in other viscera.

In deciding the question of what constitutes the dividing line between operability and hopeless conditions calling for palliation only, we are at once beset with great difficulties. While the use of the cautery and heat methods have lately been placed upon a more scientific basis by the studies of the effects of various degrees of heat

upon cancer cells, by Clowes², Loeb, Haaland, Lambert and others, still the employment of cautery methods at once suggests to the minds of surgeons the idea of inoperability and palliation. But I have no patience with those who refer to the work of Byrne as done for the relief of hopeless cancer. While he did relieve symptoms and prolong life in comparative comfort for such advanced cases as came to him, his claim to recognition is based upon a much more important achievement, that of devising a distinct curative galvano-cautery operation for the early case of cancer of the cervix.

THE BYRNE OPERATION

The technic of the Byrne³ operation can be modified somewhat today by reason of the fact that we can apply the current from the street by means of a proper transformer, which does away with the rather untrustworthy battery which caused Byrne so much time and experimentation. Suitable specula must be at hand to expose the parts. Cooling specula are not adaptable to this operation, where a part is removed, as they prevent the descent of the uterus. Byrne had an ingenious speculum of his own which never gave equal satisfaction in other hands. I use the ordinary weighted speculum, or a wide Simms held by an assistant. To retract and protect the bladder a Jackson speculum is probably the best. Other suitable retractors should be at hand to draw away the lateral vaginal walls. In case the vaginal outlet is small a Schuschardt incision can be made to allow a better exposure of the vagina and cervix. In case of an early involvement, the cervix is then seized with the diverging volsellum forceps passed well up the cervical canal. The cautery knife is then placed upon the cervix at a short distance from the bladder insertion and the heat slowly applied. Byrne laid great stress upon the necessity of turning the heat on gradually after the knife had been applied cold. The incision is then carried through the mucous membrane, all around the cervix, care being taken not to make traction upon the cervix until the knife has penetrated the sub-mucous structures. This is to lessen the danger of injuring the bladder and rectum. It is a mistake to make the incision and attempt to dissect off the bladder as in ordinary vaginal hysterectomy, as this causes free bleeding which defeats the object of the operation. Care must be taken to keep the knife at a dull cherry-red heat; if the knife is too hot, free bleeding will take place. It requires more time to cut through the tissues with a low heat, but the incision will be bloodless. As soon as the sub-mucous tissue of the cervix is reached, gradual and firm traction is made upon the tenaculum in the canal, at the same time directing the point of the knife inward toward the internal os. In this way, by slowly pressing the cherry-red knife inward, searing

well the cut surface with the flat body of the knife, at the same time making firm and steady traction upon the grasping forceps, it is possible to complete the amputation well above the level of the internal os, leaving only a part of the body and fundus. The cervix attached to the tenaculum will be found to have shrunken from its original size to insignificant proportions as a result of the heat. The resulting cavern should be again gone over with the dome-shaped cautery until it is thoroughly charred and roasted. This very important point was greatly emphasized by Byrne, and I agree with Percy that it was probably due as much to this roasting as to the removal of the diseased part, that gave the good results in this method. This carbonization prevents the dissemination of heat far enough to destroy vital tissues in the ureters and bladder, but for sufficient distance to kill the cancer cells if present in the parametrium, and to seal effectually the cancer-carrying lymphatics.

If the operation has been patiently done, with a low degree of heat, it should be bloodless; hemorrhage will be caused only by too rapid severing with an overheated knife. It frequently occurs that the cul-de-sac of Douglass is opened in the attempt to make a detour of the cancerous posterior lip. This need not be a cause for alarm, and I have never seen any harm come of it. When it occurs, the head of the table is lowered, the intestines held back with a small laparotomy pad, and the operation continued. The limitations of this technic are only those which separate the early from the late case. If the uterus has lost to any great degree its mobility, if the cautery knife cannot be inserted outside the bladder line on the cervix on account of advancement of disease, the case is not suitable in any way for the Byrne method.

The fact that this operation is devoid of hemorrhage and shock makes it a particularly good choice for the woman who is weakened by previous blood losses, for the woman of advanced years, for those with thick abdominal walls, and especially for those who, on account of nephritis or cardio-vascular disease, are poor risks and a major operation is not advisable. Consent is easily obtained, the stay in the hospital is short, convalescence easy, and mortality and morbidity practically nil. After long experience with all methods, Dickinson⁴ concludes that "cervical cancer that is curable, is curable by partial cautery-hysterectomy as often as by grave operations, and attended by less risk and suffering."

Now if this operation is all that is claimed for it, has it any objections? Yes, and they are these: The contraction of the scar following the burning away of the cervix may result in a stenosis causing dysmenorrhœa or hæmatometra in women not beyond the menopause. It also has the great disadvantage of destroying the

cervix removed for microscopical examination. When Byrne published his well-known and remarkable statistics, it at once brought a storm about his head, and he was harshly criticised, principally on the ground that in most instances his cases lacked microscopical verification of malignancy. His evidence had been destroyed. Shoemaker⁵ remarks that "the fact that he (Byrne) was not dependent on the traumatism involved in obtaining a specimen for preliminary diagnosis was probably a considerable factor in the patient's freedom from recurrence."

SKENE-DOWNES' CLAMPS

This original operation has since been variously modified by different operators, and some have undoubtedly added to its scope and usefulness. Years ago Dr. Alexander J. C. Skene,⁶ a friend and contemporary of Byrne, realizing the inhibiting influence of heat upon cancer cell growth, devised a set of cautery clamps for use in vaginal or abdominal hysterectomy. The clamps were applied to the broad ligaments and parametrium, the current turned on, and the tissues cooked to a thin dry ribbon. These clamps were not much of a success until modified by Downes⁷ and have been successfully used in many cases, especially by Dr. C. P. Noble.⁸ The principal objection to their use has always been the danger of uretero-vaginal and vesico-vaginal fistulæ.

THE WERDER OPERATION

One of the most consistent believers in and developers of the cautery technic in cancer of the uterus has been the late Dr. X. O. Werder⁹ of Pittsburgh. He adapted a combination of the method of Byrne with the addition of an abdominal hysterectomy by means of Downes' clamps, which makes a radical but comparatively safe operation for cancer of the cervix. To this he has given the name of igni-extirpation of the uterus. He has probably operated upon more cases and presented better statistical results than any cautery exponent since Byrne. He has had such good success in treating cancer of the cervix with his method that it merits a brief description. A high amputation of the cervix is done with a cautery knife, following the method of Byrne, paying particular attention to roasting the bases of the broad ligaments, being sure that they are thoroughly cooked and perfectly dry. Next the abdomen is opened by a long incision. After tying off the infundibulo-pelvic and broad ligaments, and separating the bladder attachments to the uterus, the operation is completed by the use of the electro-thermic clamps. These clamps are placed upon the broad and sacro-uterine ligaments, the heat turned on until the tissues between the blades are thoroughly cooked to a thin white ribbon. This is cut and the remaining supra-cervical portion of the uterus removed.

The success of Werder's operation I consider the best proof of the soundness of Byrne's ideas, and due in great measure to the work done according to his original directions on the cervix. Werder did not get such good results when simply severing the vaginal attachments of the cervix with the cautery, and removing the uterus and adnexa en masse, and the reason is that he did not get the thorough roasting and heating of the parametrium at the cervico-corporeal junction which he gets by his later technic by Byrne amputation. Werder himself calls attention to the importance of this step, which destroys the parametrium, the principal cancer-carrying structure. In fact, Wertheim repeatedly states that it is more important to remove the parametrium than the pelvic lymph glands. So in cautery amputation, or igni-hysterectomy, it is of most importance to cook and seal the parametrial tissues at the broad ligament bases, and heat methods for the upper part of the broad ligaments are of relatively small value. That an open abdomen is of great value in aid of accuracy during vaginal manipulation is not to be denied, but it adds to the element of shock and danger of peritonitis, which the original operation was devised to eliminate.

HEAT TREATMENT OF ADVANCED UTERINE CANCER

Heat had been used in the treatment of advanced cases of uterine cancer long before Byrne's time, and he never claimed originality in this. However, he did perfect a method by which he was successful in giving relief for years to cases too far advanced for treatment by his method of amputation. This he did by a bold removal of all sloughing parts with a sharp spoon, followed by immediate and thorough cauterization of the remaining cavern. There seems no doubt but that scraping and rough handling of cancerous masses tends to spread the malignancy to adjacent parts and to distant glands through the lymphatic channels, but this is overcome by the immediate application of a high degree of heat. By heat the lymphatics are sealed, and to my mind more quickly and thoroughly by high than by low degrees. This palliative operation as practised by Byrne has been greatly enlarged in its scope, and made more radical in its application by Dr. H. J. Boldt.¹⁰ He removes the cancerous area with the sharp curette and dries the surface with styptic pack; he then opens the abdominal cavity and ligates the internal iliac, uterine and ovarian vessels whenever feasible. The gauze is then removed from the vagina, and through a suitable cooling speculum the cauterization is done with the cautery point at white heat. This is guided and directed by either the operator's own hand or that of his assistant in the open abdomen. After the eschar has been thrown off, and discharge

lessened, a low grade of heat is sometimes applied for a short time. This is practically the plan which I follow except that I never open the abdomen in a stout woman, or one in very poor physical condition, preferring to trust to the cauterization, and keeping the more radical part of the operation for a later date, when, as a result of lessened absorption and cessation of hemorrhage, and greater mobility of the pelvic organs on account of the heating, the process can be safely repeated with open abdomen. Also that I prefer to put a pack against the eschar and allow it to remain until the pack and eschar come away together after about ten days. This has the objection that the discharge becomes very foul, but I think the slough comes away more cleanly, and final healing is more satisfactory and rapid.

This method repeated as frequently as symptoms demand, before the patient has become too much weakened by septic absorption, will, I firmly believe, prove equally if not more effective in retarding the growth of advanced cancer than the long-continued low heat application of Percy.¹¹ And the dangers are not so great, either as regards mortality or fistulæ in ureters, bladder or rectum. As Dr. Percy has repeatedly stated, his method is not a cautery operation. His work has not been a return to the principles of Byrne, but a much more radical advance upon Byrne's ideas; for while the latter removed the diseased area, leaving a portion only of the affected organ, Percy goes still farther and contends that even the extirpation of the diseased part is not advisable. While his personal results are highly gratifying to him, in other hands it is not equally successful. And such indeed was the case with Byrne. We are not all able to handle the cautery with equal skill; in unskilled hands it is dangerous, and more dangerous where low degrees of heat are used; for the penetration of low degrees of heat cannot be controlled, whereas high degrees of heat, not penetrating so far on account of carbonization, can be controlled more satisfactorily. For this reason Dr. Percy's method is not considered today to be as safe and simple a procedure as it was a few years back. On account of its apparent harmlessness and ease of application, every practitioner who had a case of cancer of the uterus purchased the outfit and applied the treatment. Many had never handled a cautery before, and operative deaths and troublesome fistulæ followed as a matter of course. But all credit is due him for putting cautery methods upon a more scientific basis, teaching us to guide the vaginal work from the abdominal side, perfecting cooling specula, and encouraging hope of relief for patients formerly abandoned in despair.

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SOCIAL INSURANCE.*

By HENRY LYLE WINTER, M.D.,
CORNWALL, N. Y.

IN this, the greatest period of social unrest which the world has ever experienced, every individual and every group of individuals has to face problems of more or less far-reaching importance. Were they given opportunity by their leaders, usually self-appointed and having as many motives as there are varieties of character, the great mass of the people would settle down into regular modes of life. But stimulated imaginations do not make for peace, and we can feel no assurance that the comparative sanity of 1915 will be recovered immediately.

* Read at the Annual Meeting of the Seventh District Branch, Rochester, N. Y., October 2, 1919.

We physicians have had our problem before us for several years. A set of radical measures which compel all employees in certain groups and their employers to pay sums of money into funds which are to provide to employees, without further cost, medical, surgical, and dental care, medical and surgical supplies, nursing, hospital, and sanitarium care, cash indemnities for time lost through illness, and funeral expenses. These measures are known as Social Insurance, or Health Insurance, and comprise the most radical scheme for social legislation which has ever been presented in the United States.

There is no other radical measure which has so nearly succeeded in being put upon the statute books in New York State, and there is no other measure which will be more actively pushed at the next session of the New York State Legislature.

This is our problem because the public welfare and the public health are involved. It is our duty to push ourselves forward and solve it. The problem is an acute one. We must get after our solution of it without delay, and when we decide what we will do with it, let us stick to our decision.

At present the profession is divided into three groups: First, a very large majority which is unqualifiedly opposed to health insurance and which will not accept any compromise. Second, a small minority which, while opposed to health insurance, is convinced that it is inevitable and therefore believes in constructive criticism of the measure to the extent of preparing a bill which could be accepted as satisfactory to the medical profession. Third, a very small group which believes in health insurance and is frankly working for it.

Though there are these three groups, we are entering upon a period of renewed legislative activity divided, practically, into only two, because there can be no middle ground on a question of this kind. The group which is ready to compromise is automatically eliminated from the opponents, or, just as automatically, joins the proponents. You may state the situation in whichever way is the more agreeable.

Because of this division I am anxious to present, as briefly as possible, an outline of the whole subject as I see it after a number of years of study.

The medical profession has been led to assume that it must limit its attention and criticism to the *medical* provisions of the proposed Health Insurance legislation, and that the subject as a whole would receive more competent treatment in other hands. This is a mistaken attitude. It is also a dangerous one because there are many phases of these measures which have no direct connection with the medical provisions but which exert an influence upon public welfare and gen-

eral efficiency. To approve or disapprove without due consideration of the whole subject may place any prominent group, like the physicians, in the very undesirable position of having failed in a public duty. In any event, it lays them open to the criticism of superficiality.

While I feel very strongly on this subject, I will endeavor to present it dispassionately and fairly. If I depart from the usual sequence of analyses, it is because I think the subject best presented in that way.

First, then, where, when and how did the present agitation for Health Insurance in this State begin? To the best of my knowledge it began in the American Association for Labor Legislation about five years ago and as an indirect result of the success of that organization in fathering Workman's Compensation legislation.

The American Association for Labor Legislation publishes the names of a number of men who are well and favorably known in various walks of life as its Advisory Committee. The propaganda for Health Insurance is conducted by the secretary of the Society. This Association has furthered some desirable social and labor legislation. The value of Workman's Compensation is an open question and its discussion is beyond the scope of this paper. It is referred to merely to show the point of view of its advocates. Workman's Compensation is not insurance in any sense of the word. It is compulsion applied to the employer for the benefit of the employee. The fact that the law provides that the employer can insure himself against the expense put upon him and that he can in this way estimate the expense and add it to the cost of production, and pass it on to the consumer, in no way alters the character of the law. Its enactment meant the introduction of an entirely new and epoch-marking factor into American institutions, that of *paternalism*.

The proponents of laws like the above are prone to resent the use of the term "paternalism" and to seek cover for the element of compulsion which it carries by instancing the Compulsory Education laws as parallel legislation. The arguments put forward on these grounds are, of course, specious, because education is an effort of society to train its rising generation harmoniously with its ideals of life. Its effects are to prepare the individual to compete with others living under like conditions. Its antiquity is lost in mythology. In this country it dates back to the Massachusetts Act of 1647† which compelled every township of fifty or more houses to teach the children reading and writing, and where there were a hundred houses to establish a grammar school. Compulsory education does not bear the least resemblance, in purpose or effect, to compulsory indemnity. Its

effects are individualistic, not paternalistic.

We will discuss this introduction of paternalism to determine what influences it has and will have upon us as citizens. Because Social Insurance had its beginning in Germany, a comparison of some conditions in that country and in the United States may serve to clear our view.

The traditions of a people are perhaps the greatest force which must be reckoned with in an estimate of potentiality. The United States was founded as a protest of the people against discriminating legislation. These people had settled in the territory of the original thirteen States that they might find opportunity for the expression of individual ideals. They banded themselves together because in union they expected to find strength to perpetuate their ideals. They built with this end in view, and, though once threatened by internal dissension, succeeded so well that up to recently we have had what Lincoln so aptly described in his Gettysburg address as a "Government of the people, by the people, and for the people." And when Lincoln added that what had been done and was being done was done that this Government "shall not perish from the earth," he voiced the sentiment of every American who by birth or association possesses the traditions of his country.

The German Empire as it existed before the war was comprised of kingdoms, grand duchies, duchies, principalities and free towns which were united by the force of Prussian arms and the iron determination of Bismarck for Prussian supremacy. The histories of these several political bodies were practically the same. They had developed around feudal protectorates and the traditions of the people were entirely encompassed by the dictates of their rulers. Through custom they learned a complete dependence upon their rulers and in times of trouble turned to them as instinctively as the little chicks seek cover under the spreading wings of the mother hen when danger threatens.

It is thus apparent that the United States and Germany have no traditions in common. In a general way this is true of the United States and all European countries, so that the contention that Health Insurance has ceased to be a German institution because other European countries have adopted it in no way refutes our argument.

The years just preceding 1883, the year of the enactment of compulsory Social Insurance in Germany, were marked by a growing social unrest. Though Bismarck was building upon a national character which grew out of the conditions above mentioned and was strengthened by the philosophy of Fechté, who had fired the loyalty of the people by his Berlin addresses during Napoleon's occupation of Prussian territory, individualism could not be entirely downed. The Social Democratic party which had been

† The New York school work of 1638 was not compulsory.

organized by Ferdinand Lasalle in 1863 and upon which the teachings of Karl Marx had had a definite influence, was growing at an alarming rate. The many concessions which it had been necessary to make to the people during the critical years of the unification of Germany had their effect in strengthening radical thought. These influences were so potent that the Social Democrats cast 500,000 votes in the election of 1870. With these votes they won a dozen seats in the Reichstag and became a factor of importance.

The forces of authority in the state were not seriously threatened, but the future was far from safe with so large a mass of the people clamoring against them. Bismarck's forceful methods found an excuse in two attempts made upon the Emperor's life, and in October of 1878 he passed a very drastic bill in the Reichstag against the Social Democratic party. By this bill socialistic associations, socialistic printed matter and contributions or the solicitation of contributions for the aid of socialistic publicity or propaganda were forbidden, and meetings at which any socialistic ideas should be voiced were to be immediately dissolved. This law was enforced and the hundreds of prosecutions and punishments which followed destroyed the organization of the party against which it was directed, but caused the keenest resentment among great numbers of people and had the effect of increasing the social unrest and strengthening the force of the secret socialistic propaganda which emanated from the members of the disorganized party.

The failure of the law of suppression to accomplish expected results led Bismarck to adopt other methods. Schaeffle had propounded a theory of state socialism and in it had included a system of Social Insurance. Lasalle, the founder of the Social Democratic party, and others had advocated various systems of state aid to the sick. Out of these, presumably, Bismarck developed the system of Social Insurance which he presented to the Reichstag. His own words while defending this program before that body show the purpose behind his efforts. He said: "Give the workingman the right to employment as long as he has strength, assure him care when he is sick, and maintenance when he is old. If you will do that without fearing the sacrifice, or crying out 'State Socialism!' as soon as the words 'provision for old age' are uttered, then I believe these gentlemen (meaning the Socialists) will sound their bird call in vain; and as soon as the workingmen see that the Government is deeply interested in their welfare, the flocking to them will cease."

While these measures became laws they did not check the growth of the Socialist party. They had, however, the distinct effect upon the people which Bismarck expected. This point I want to especially emphasize. They modified the

people's attitude toward the Government. The Government's interference in all legislation affecting the smallest details of the economic life of the workers convinced the younger generation at least of its altruistic motives and taught them to consider the Government as the kindly guardian of their interests.

The German people, with the traditions I have referred to, accepted this paternalism as a panacea for their troubles, and their placidity was encouraged and fed by the Government by an ever-increasing, though unpretentious, campaign of governmental control. When the war began every branch of German industry and activity was subsidized by the Government, and paternalism was complete. The production of labor and invested interests were alike so under the domination of the system that they held no conception of a scheme of things in which the central government was not the directing and stimulating fountain head.

Germany was a huge, efficient machine, in which the human parts had been so carefully instructed in their interdependence that individualism, when thought of at all, was considered primitive and obsolete.

The result of these measures was a commercially dominant Germany. German financiers had extended their lines of credit into all parts of the world, and distributors of manufactured products were tied up, through credit, to the manufacturers of Germany.

The phrase, "Made in Germany," was stamped on every conceivable object, and these goods met every competitor's price, at times, I am told, by a sacrifice of profit or at actual loss, but usually by reduction in the cost of production either by increased hours of labor or reduced wages to employees.

After the war began we all had experiences of the far-reaching influences of this German system. We found ourselves dependent upon Germany for many things; frequently for minor essentials, but always for essentials. The system, having in view only this commercial domination, had succeeded better than we realized. But this single vision was exacting its penalties unperceived by the system. One cannot dance unless one pays the piper, and Germany was paying in the most valuable coin in the world, the individuality of her citizens.

Sheltered behind her high protective tariff wall this effect was comparatively difficult to recognize, for the German had been taught, parrot-like, that one German was as good as two of any other nation. But when the inevitable time came when Germany had to utilize the war machine, which she had built up as a necessary background for her commercial ambitions, the price the piper demanded was apparent. The war machine was no longer in familiar places,

the schedule failed, and some of the cogs in the machine itself frequently failed to mesh.

The individual soldier was a good soldier as long as he retained his given place in the ranks, but when the ranks were broken and he was cast upon his own initiative he threw up his hands and yelled "Kamarad!" at the first foe which confronted him. His paternal Government had deliberately killed his individuality for Prussian supremacy and had over-reached itself. German Social Insurance had lost the war.

In the year preceding the war the process of killing individuality succeeded so well that no leaders in the field of medicine were produced; no advances of any kind were made, except in the field of commercial chemistry; the whole profession was reduced to the dead level of collectiveness (*i. e.*, mass). During this period the United States produced numerous medical leaders whose contributions to science have been of untold value to civilization.

We are today standing at the parting of the ways. If the people will wake up we may choose the right road. But the people won't wake up; someone will have to waken them.

The depth of their sleep is apparent in Germany, where, after all the people have suffered, one would expect to find them alert to their interests, and yet they appeared to approve the first published utterances of the new Government when it announced that the Fatherland was first, and that all must work to rehabilitate its trade, and if anything were left it might be appropriated for private needs.

Being a perpetual alarm-clock is not an especially alluring occupation, but someone has got to rouse the people, and I feel that it is the duty of the medical profession to undertake the task in so far as Social Insurance is concerned.

We will decide for ourselves, first, whether we want to live under a government "of the people, by the people, and for the people," or one of the people by the central governing body for itself. In other words, do we believe that the Government was established for the benefit and protection of its citizens, or do we prefer to think of ourselves as grouped together primarily for the purpose of supporting a Government.

Second, we must decide whether we prefer to live under conditions which develop individual excellence or under those which relegate the individual to the mediocrity of group commercial supremacy. The proponents of Social Insurance advance two reasons for their advocacy of compulsory Health Insurance in this State. The first is that conditions exist which demand a remedy, and the second that those who suffer from these conditions are unable to provide the remedy without help from other sources.

The data upon which these conclusions were based were drawn from reports of several inves-

tigations. The results are reasonably uniform and I will, therefore, not burden you with detail.† They show that from 1.5 per cent to 2.85 per cent of the population were sick all the time and that from 1.4 per cent to 2.3 per cent were disabled. The percentage was slightly higher among women than among men. The percentage varied, of course, with age.

Estimated from these tables, the average time lost through sickness was 8.3 days for men, and for women 8.4 days per year. This would mean about 6.9 working days. This coincides with the result, to date, of investigations now in progress in New York State, which also show 6.9 as the average number of days lost per employee by illness.

The inference drawn from these figures is, broadly speaking, that illness is the cause of poverty and that reimbursement for the money lost will relieve the latter and prevent the former. These are, of course, very bald statements, and the proponents of compulsory insurance qualify them more or less completely, but when the claims are shorn of all elaborations they mean exactly what I have written, or they mean nothing.

We are not to infer, however, that the compulsory insurance plan will affect any but the workers, who are beneficiaries under the act. Certain enthusiastic proponents would lead us to believe, and appear to believe themselves, that all sickness will be relieved and all poverty removed; but the more reasonable advocates do not make such claims. But no matter what they claim the fact still remains that the enactment into law of health insurance schemes will not appreciably decrease the amount of money necessary for charitable purposes.

As a matter of fact, German statistics‡ appear to show that poverty was steadily increasing before the war. Certainly in some districts the amounts raised for poor relief were increased.

Of course, the problems of the care of poverty have become more complicated and expensive, but these complications are less the result of increased illness than of complex social conditions. It appears, then, that we are not dealing with the question of poverty at all, or with the problems of illness associated with poverty. If health insurance schemes included unemployment, the situation would be altered, but now our question is merely to determine whether conditions of illness among employees are such as to require the paternal interest of the State in their alleviation.

Prevailing abnormally high wage scales in all industries appear to put the workingman on a

† The following reports were studied.—Surveys of the Metropolitan Life Ins. Co. (Five Surveys). Report of the California Commission. Report of the Pennsylvania Health Insurance Commission. Report of Ohio Health and Old Age Ins. Commission. Report of the Illinois Commission. Report of the Commission of Health of Penn.

‡ German Imperial Statistical Office, 1894.

higher plane of living, but, as a matter of fact, they do not simplify his problems of life because, for various reasons, production has fallen behind. The wage scale always has and always will bear a reasonably definite relation to the purchasing power of the dollar; in other words, to production. For this reason the statements frequently heard in opposition to Social Insurance that this or that trade is in receipt of such and such daily wage and therefore able to stand on its own feet are not, in themselves, convincing arguments. The wage scale must therefore be considered as comparatively fixed in any given country, its wide variations being between countries having different standards of life for the workingman. In this connection I will digress for one moment to outline the living conditions in Germany¹ for several years immediately preceding the war.

The highly skilled trades worked from fifty-seven to sixty hours a week, other trades from seventy-seven to eighty-four hours. Women employed in canning factories, for example, averaged 100 hours of work weekly. Every second woman was earning her own living, and so many were employed that fully one-third of the economic labor of the Empire was performed by women.

The general mass of these workers lived in "barrack tenements." The baths in these buildings were used by from eight to ten families. About one-fourth of these families were compelled to take lodgers to pay their rents. Wages were about one-third of those paid in the United States. The purchasing power of a dollar was about one-quarter more in Germany than in the United States.

These conditions differ so widely from those prevailing in the United States that the frequently reiterated comparisons made by the proponents of Social Insurance in their American propaganda lose all argumentative force. They do show, however, that Social Insurance has accomplished very little, if anything, in social betterment.

The scale of wages in the United States has always been high enough to maintain the American workingman on a much better plane than that enjoyed by those in similar occupations in other countries. He is self-supporting and self-respecting; and opportunities for advancement are open to him, provided he possesses, among many other things, the physical health to follow his vocation. This brings us back to the main argument as to whether the average financial loss through illness is sufficient to require compulsory indemnity.

Referring to the previously quoted inquiry now going on in this State, we find that about 2.3 per cent of the annual wage is lost through

illness of each person employed. This same inquiry shows that there is about 9.1 per cent of wages lost by absenteeism from other causes. I am not in possession of information supplying details of the latter loss, but as these data are based upon inquiries made in operating industries, practically all of it must have been within the control of the employees. We find, then, that the average workingman is losing three times as much money through voluntary absence from work as through illness. This certainly proves that the workingman is not worried over his own problems of life. If he were feeling the financial strain of illness, he would scarcely add to his trouble by voluntarily reducing his income.

It has been stated that a very small percentage of workmen have made any provision for the proverbial "rainy day," but the saving institutions of the United States have millions of dollars on deposit and workmen are a large proportion of depositors.

There are numerous reports which have been quoted to refute statements like this. For example, the Ohio Health and Old Age Commission collected information regarding loans made through loan brokers (pawnbrosers) and reported that from 30 to 50 per cent of these were made because of illness. There is no question but what illness produces financial distress in individual cases, but so very small a percentage of sick employees seek relief through loan brokers that figures like these are practically useless in considering this subject.

As a further evidence of the American workingman's ability to take care of himself, the report last quoted shows that 73.1 per cent of those absent because of illness were carrying sickness insurance of some kind.

The average cost of medical care among workmen's families is about \$40.00 per family per year. This does not, as it has been claimed, always "fall upon those who can least afford to bear it," because figures collected by the Committee on Economics of the State Medical Society show that the wage earner of the family received only 14 per cent of the care given.

In several surveys which have been made in different parts of the United States the number of sick persons not receiving medical attendance varied from 28 to 38 per cent. This is not a very great variation.

The lesser number were residents in Chelsea, N. Y., a prosperous district, in which lack of financial ability to obtain medical aid could not have been a factor. The larger number were found in the North Carolina survey, where conditions were directly opposite. The inference is that some other factors beside financial ability influences a certain percentage of the public in electing whether to seek medical care or not.

The subject of obstetric care has been exten-

¹ Report of Gustavus A. Myers for the League for National Unity, 1918. Quoted from the Proceedings of the Southern Labor Congress.

sively discussed by the proponents of Health Insurance. Like other branches of medical service, it is not always adequate, but, with the exception of prenatal care, which I consider extremely valuable to both mother and child, it is usually selected by the expectant mother. Her choice is most frequently based upon her information and environment. For proponents of Health Insurance to advance the number of obstetric cases attended by midwives as a reason for establishing their system, shows a surprising lack of knowledge of existing conditions. Those who employ midwives do so because they have been so educated; if they could choose between midwife and physician at equal expense, or without expense, would probably take the former.

The necessity for Health Insurance has not been proven. Its proponents are trying to force a system upon the workingman which he does not need and which, if he knew anything at all about what is going on, would not accept. The fact that the State Federation of Labor, through its officers, is clamoring for Health Insurance does not alter my opinion that labor as a whole is in entire ignorance of the subject, because I have talked with labor and I know. Where labor has been informed and where a vote has been taken the workingmen have been almost unanimously opposed. In a test vote taken in Utica, N. Y., where no influence was brought to bear, pro or con, on the workingman, only 112 out of over 15,000 voted for Health Insurance.

And yet with all of this the leaders are trying to hang a millstone of over \$200,000,000 per year around the necks of the people of New York State, and their own members, actual or potential, will carry half the weight. The American workingman might, perhaps, be willing to carry this weight, collectively, if benefits were apparent, but when labor is shown that somebody else is going to carry the other half and that labor will be 50 per cent pauperized by the enactment of Health Insurance legislation, I believe that labor will be self-respecting enough to revolt.

Just as soon as Labor puts her neck under the yoke of paternalism she will fix her station definitely and for all time. She will have established a class distinction and become dependent. She will have established a legacy for her children and her children's children; and a class of hereditary "hewers of wood and drawers of water" will exist in the United States, as it now does in Germany.

But, gentlemen, this Health Insurance agitation has been good for us. If it goes no farther it will have brought us more firmly together than any other thing which has ever come to us. If it goes farther and becomes a law, it will submerge individuality of effort among us, as it did in the profession in Germany.

We will work and hope against such a calamity. The good that this agitation has done us is to show us as a whole that certain advances in the practice of medicine are necessary for the public good. Many of the lines along which progress can be made have already been opened by the several branches of Public Health service in the United States and the State of New York.

I want briefly to call your attention to the direction in which preventive medicine may be extended and diagnoses facilitated. I do not believe that the practice of medicine as such is a function of the State, but that it belongs, and always will belong, in the hands of the individual physician.

The following is an outline plan for adding to the work of the present Department of Health of this State. It might be utilized as the basis for the establishment of a separate commission, but that is not, in my judgment, a wise plan:

1. *Heredity. Research Work Only.*—The present work, now in the hands of Dr. Davenport, could profitably be enlarged.

2. *Prenatal Care.* This is essential and should be directed from a center, or several centers; registration of expectant mothers should be directed by law.

3. *Post-Partum Care of the Mother.*—If the mother is an employee, a minimum limit of time, from three to six weeks, depending upon the character of the employment, should be fixed by law, which must elapse before the mother is permitted to return to work. The wife of the average workingman now remains in bed nine days after confinement, except in case of ill health or some complication when the period is ordinarily extended. During the post-partum period the average workingman's wife is cared for by some neighborhood woman, who is usually called for such work, and who gives all or part of her time to the patient as the arrangement is made. These women are usually very practical and are efficient in caring for the house, but their knowledge of medical matters is usually practically nil. If these women were taught the simpler rules of hygiene and antisepsis, their efficiency would be increased and the care of the post-partum state would be reasonably well done. Proper obstetric aid and the prompt repair of damage incident to delivery will, with the continuation of the nine-day period of rest in bed, added to the training of the nurses, be sufficient in all but the exceptional cases.

4. *Infant Hygiene.*—(a) Educational: Extension of the instruction and of the child welfare work as it is now conducted. Inspection by community nurses to be provided for by law, and the general care, such as housing, outings, etc., to be supervised at this age as at other periods through life. Milk and supply stations to be provided.

5. *Child Hygiene*.—The pre-school period should be under the same supervision as that provided for infants. The school period is now reasonably well provided for. The necessity is for a wider application of the system already established. The direction of this school work should be assumed by the Public Health Department (to be formed), instead of being administered by the Department of Education as at present.

6. *Child Labor*.—This is at present cared for in most States by legislation covering age, schooling, physical conditions, hours of labor and kind of labor.

7. *Control of Hygiene of Industry*.—Is now partially controlled and can be absolutely controlled by legislation. In New York State the Department of Labor now administers this work. The duties of this commission, in so far as they relate in any way to the health of employees, should be transferred to the Public Health Service. These duties should be supplemented by educational work.

8. *Personal Hygiene*.—Educational in so far as attention to detail is concerned. Legislative control as regards all relation to others and to community interests.

9. *Communicable Diseases*.—Control by legislation.

10. *Social Medicine*.—(a) Educational; mental and physical hygiene. (b) Application of preventive measures for the protection of the public health and the physical and mental efficiency of the individuals as units of the State, through legislation. (c) Laboratories for research and for clinical diagnosis, the former of about the same character and for about the same purposes as those already in existence. The latter to be of sufficient number and so located as to be available to every individual in the State, and to be used to extend the latest diagnostic methods to all. The utilization of these should be at the direction of the attending physician, and should be compulsory and mandatory upon the patient.

11. *Separate Classification for Occupational Diseases*.—These should be included under the benefits applied through the present "Workman's Compensation" laws.

This outline merely indicates the general direction which our efforts can profitably take. It covers all of the inadequacies under which public medicine and the practice of medicine now struggle. I offer it to you as a groundwork for concerted action on the part of the medical profession. It is not un-American, it will not foster class distinction, it will not turn our American workmen into paupers; but it will go far to eliminate preventable disease and place our profession in the van of progress, make the American workman a more virile, efficient individual and perpetuate American traditions.

THE DEVELOPMENT OF STATE DEPARTMENTS OF HEALTH IN RELATION TO HEALTH INSURANCE AND INDUSTRIAL HYGIENE.*

By AUGUSTUS B. WADSWORTH, M.D.,
ALBANY, N. Y.

PREVENTIVE medicine has developed so rapidly that it has greatly enlarged its scope in the conservation of the health of the community. In addition to its earlier activities based upon the discoveries in the new science of bacteriology which constitute the great achievements of modern sanitation, preventive medicine is now reaching out into every branch of the modern social organization.

At first, health departments were engaged in enforcing the regulations of quarantine and cleanliness, the removal of nuisances, and the protection of water supplies. Then they undertook the laboratory examination of samples of water and sewage in order to determine pollution and to devise methods of purification; and from these simple measures of preventive medicine, very largely through the development of laboratory facilities, they rapidly extended their practical usefulness.

Departments of health now reach out to protect the citizen by doing for him what he cannot do for himself in the present circumstances of life. His food and drink are safeguarded; his waste and that of his neighbor are safely disposed of; if occasion demands it, the essentials of personal hygiene and cleanliness for himself and his family are brought to his attention; public nuisances are abated for him. Finally, if he lives in close contact with his neighbor, precautions are taken for him and for every member of his family as well, against the spread of diseases which are communicable. All of these things are done; and in order to do them, departments of health have developed into complex organizations with various branches which operate centrally in an administrative capacity through a field force in touch locally with the citizen and his needs.

Despite this wonderful development, preventive medicine has nevertheless progressed in a comparatively narrow field—the control of the infectious diseases. Yet these diseases usually develop as a result of predisposing conditions, the prevention of which falls within the province of public health work. The infectious diseases are but a part, and, from the economic point of view, a comparatively small part, of preventable human sickness and disease. The diseases of adult life, constitutional diseases resulting from cardiac, renal and digestive disorders, cancers of all kinds, the occupational diseases, both chronic and acute disturbances of function,

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

mental and nervous derangements, even structural deformities, and a great variety of minor illnesses, are all to an extent preventable. All these facts are now fully recognized, not only by public health officials and the medical profession, but also by every one who, whether in public or in private life, carries any responsibility, and we see everywhere in the civilized world attempts to improve the conditions that vitally affect health and happiness. Dissatisfaction with the present order of things and the demand for new adjustments in the social organization are pressing for governmental action. The rights of labor and the responsibilities of capital are being developed with a rapidity that is on the one hand encouraging and on the other alarming lest gross errors be made, serious injustice be done, or our resources dissipated.

The three major functions of all public health work are regulation, education, and personal or community service. Chief of these is the personal or community service which is rendered; but if this is to be made effective all three functions must be fully developed and carefully co-ordinated. Sanitary regulations must be very carefully and discreetly adapted to the situation in order to gain the confidence and co-operation of the people they are designed to serve. It is extremely difficult, if not impossible, to enforce regulations which the people do not fully understand. Hence, educational work is indispensable in order to prepare the people for the necessary regulation, and health departments have been encouraged and even forced to make the educational phase of their work an important one.

Such educational work brings to the physicians and to the people a reliable presentation of the practical value of all the new methods that are from time to time being developed and applied. It also brings to the physician and to every citizen a knowledge of what the department of health is doing, or will do, or hopes to do for him through the established agencies of preventive medicine which it has developed. The establishment of the School of Hygiene at the Johns Hopkins University and of the School of Industrial Hygiene at Harvard University are striking examples of professional interest, and the agitation for health insurance and for various sorts of social welfare work is evidence of the awakening of the public conscience.

In regard to health insurance:† As it has been tried in different countries it is generally recognized as a failure. It provides an unsatisfactory service for its beneficiaries and is sub-

ject to abuses. Moreover, so far as it has been developed in other countries, notably Germany and England, it does not tend to increase the efficiency of the medical service which is rendered to its beneficiaries. Whether the physicians are selected and maintained by salary or chosen on a panel, from which the beneficiaries may in turn choose their physicians, or whether the beneficiaries are left free to choose their own physicians, health insurance does not provide for securing the more competent physicians of the community for this work. On the contrary, except in special instances, the leading men connected with hospitals and communities have not undertaken the work. In fact, the health insurance has followed, to some extent, "lodge" practice and is said to perpetuate the odious features of it.

But quite apart from all these objections, health insurance is not what the term connotes. This is clearly demonstrated by the experience with it in other countries, notably England, where the laws were formulated by Lloyd George and his political adherents, and no advantage was taken of the advice or counsel of experts in public health work. Health insurance is not health insurance. It is not in any sense preventive medicine. On the contrary, it is a series of sick benefits or poor relief, utterly inadequate and usually badly administered. And thus it has been a complete failure in England and Germany where it has been extensively tested. It has not affected the incidence of disease, the mortality or morbidity rates, save possibly to increase the statistics of them through the abuses to which this so-called health insurance is subject. It is a fetich which has appealed to the awakened but misinformed public conscience. Legislators whose duty and responsibility it is to formulate and pass laws to meet the pressing needs of the situation will do well to heed the lessons that are to be learned from all the practical experience with health insurance; they will do well to take expert advice and counsel in deciding these difficult questions which appear plausible but which are so beset with dangerous pitfalls; but, above all, will they do well if, taking a safe, conservative stand, they devote all their efforts to developing the departments of State service which are already organized and have already had practical experience in preventive medicine.

In industrial medicine, however, conditions are quite different. The large industrial organizations employ physicians who are responsible

† The term "health insurance" has been used without any very critical appreciation of its precise meaning—in the sense that one may insure against loss from sickness as one insures against loss from fire. Compensation for disability and sickness, for funeral expenses in case of death, sick benefits, poor relief, and the like, all may possibly be considered to be a form of health insurance. All of these compensations might conceivably indirectly tend to conserve the public health to a limited extent, if they are advantageously administered. Certainly such compensations are wise and just and necessary if the

privileges are not abused. But they have nothing to do with a larger and truer conception of health insurance that marshals all the agencies of preventive medicine to assure the public health—the health insurance the chief aim of which is to prevent disease, disability, and human suffering. Comparatively few authors make these distinctions, doubtless owing to the fact that they are not in sufficiently close touch with public health work to appreciate the significance of preventive medicine. A notable exception, however, is the discussion of the subject by Brend in his book "Health and the State" (Constable & Company, Ltd., London, 1917).

for their work and well trained in it. Hospitals, clinics; lectures, demonstrations and a factory and house nursing service are all established as occasion demands and practical results secured. The labor organizations have also caught the spirit of the times, and many of them have their own corps of experts who are entering this field of preventive medicine. This is a most significant sign and confirms more forcibly than anything else the practical value of a proper organization of the work. The scope of the service of such organization in preventive medicine might very easily be greatly extended with the co-operation of the State departments of health. The medical service is thus expanded and developed to meet the needs of conditions as they arise. Efficiency is increased as the organization develops. While there has been considerable opposition to and criticism of health insurance,[†] industrial medicine has received unqualified support from every quarter. The results that have already been obtained have so fully justified the expenditure of time and money that the capitalists of the corporations have profited financially, and the laboring man has gained substantially in health. The economic value of such work has been fully established. But this plan of industrial medicine fails to provide for the greater number of all employees who work in smaller places and are not beneficiaries of the medical organization of the large corporations. Obviously, all the people must be taken care of, and there is no provision for this at present; nor is there any immediate prospect of securing such a well-organized medical service for all of the people, save through the agency and the development of the State organizations that already exist; mainly the departments of health.

New York State has not done anything as yet which deserves special recognition in the way of industrial medicine. It has never taken the lead in this phase of public health work. One of the first attempts of the State Commissioner of Health to establish new methods and to develop practical service to the medical profession and the public along these lines met with discouragement from the medical profession. The purpose of it was misunderstood. Dr. Biggs proposed to establish at different points in the State centers from which public health activities could radiate to the surrounding community. Through these centers laboratory facilities and

counsel and advice of qualified experts would be at the service of the physicians of the district, to bring them into touch with these broader aspects of preventive medicine, and to supplement their knowledge and experience. Physicians thought that they were to be supplanted by State medicine and so opposed it, little realizing that it would have greatly strengthened their position, increased their efficiency, and safeguarded their future. Without some such aid many communities will soon be without physicians.

The New York State Department of Health is already partially organized, and could be completely organized to meet this situation. In the first instance, the State Department of Health provides a central nucleus from which educational and other necessary work can be organized and operated in the State through branch or local centers. There are now thirty or more municipal and county laboratories established in the State outside New York City. These laboratories co-operate with the central laboratory in Albany. Standard methods of making the diagnostic examinations of specimens from many of the infectious diseases have been formulated and are now very generally adopted. They are subject to inspection and control. They turn to the central laboratory of the State Department of Health in Albany whenever their problems require aid.

Extension of this laboratory service to meet the developing needs of preventive medicine in a much larger field than has hitherto been attempted would not be a difficult problem. Laboratories form excellent centers from which to reach and serve physicians of a district. In any event, these local branch centers could co-operate with the physicians generally, so that a physician would always have near to hand a reliable source of counsel and advice and all the laboratory aids necessary in his work. By similarly co-operating with the institutions and hospitals of the district, and also with all of the physicians engaged in industrial medicine in the district, such a center would tend to organize the work and standardize it and increase not only their own efficiency through broader and larger experience, but the efficiency of every physician in the district also. Such an organization of the health department would not in any way interfere with the practice of physicians, but it would tend to establish them in their work and to promote and increase their efficiency.

In order to accomplish the best results, however, competent experts must be induced to enter the State service. The recognition of the scope and importance of State service has been greatly extended by the experience of medical men in the Army during the war. One meets continually men of the highest education and

[†] Many though not all the differences of opinion regarding the practical value of different health insurance laws might very well disappear if the term "health insurance" was limited to preventive measures, and all other forms of health insurance accurately classified as compensation. Thus there would cease to be any confusion regarding the scope and purposes of a campaign for laws providing for compensation or for laws for adequate preventive medicine. There would thus be such clear justice and truth in any such campaign, which would thus stand clearly upon its merits, that much of the acrimonious debate would lack significance. Laws for compensation would then stand on their merits and be passed, if the laws are satisfactory; and similarly, health insurance, if it provided for adequate preventive medicine, would receive unqualified support.

experience returning from service in the war who have acquired a keen interest in the broader problems of public health work and preventive medicine. If adequate salaries were appropriated, the State could easily secure the best talent; but it requires considerable additional experience in State work to appreciate the problems, and such men must specialize in the State service.

Health departments, if they are to discharge properly their duties to the citizens, must maintain their work on the highest planes. They must have experts in every branch who are unquestionably competent. This means quite a different order of things than now exists. It is only in the larger universities and medical schools and hospitals that trained experts in medicine are to be found in any of the branches of practice. In these university and medical school-centers the men focus their attention on the investigation of very limited fields of medicine. The full development of preventive medicine, if it is to be a part of public health work, must follow these lines of investigation, study and research with a corps of trained experts in each branch of medicine in order that all educational publications may be of the highest standard and critical balance and the personal or community service that is extended to the physician may be maintained at a high standard.

Although seriously handicapped by disorganization of the staff during the war, the Commissioner is deeply interested in all these problems and is fully prepared at the first opportunity to develop preventive medicine along these lines for the State of New York.

The literature upon industrial hygiene and internal medicine in their relation to public health work is scanty and fragmentary, and all of it is comparatively recent. During the last few years, besides information on health insurance, reports have been published upon the work that industrial and commercial establishments have organized in the way of medical care and inspection for the employees. These have usually appeared in the more popular engineering and technical journals here and abroad. But now this so-called welfare work has broadened, and the subjects of industrial hygiene, preventive medicine, and the question of a unified public health service are of paramount and present interest. The medical journals generally are beginning to devote space to editorials and notes upon industrial hygiene, and a new journal upon industrial hygiene is being published under the auspices of the Harvard Medical School which will be devoted entirely to the subject in its various aspects. Suggestive material may be found especially in the recent numbers of the United States Health Reports and the *American Journal of Public Health*—periodicals accessible to all—and in scattered editorials and notes in the Eng-

lish and Canadian journals, as well as in those of this country. A short list of references on these subjects is appended herewith.

These are stirring times: nearly everyone is feverishly alert and in a degree apprehensively so for any eventuality. It devolves upon the medical profession everywhere, and especially upon the members of it who are engaged in preventive work, to consider carefully all public measures in whatever guise they may appear, in order to determine their true relation to the public health and to preventive medicine, and to direct all this energy into the proper channels; and especially is this the duty of all those who are actively engaged in public serving—politicians, legislators, social welfare workers, labor leaders or public health officials—who as experts in their fields mold public opinion.

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Committee on Prize Essays

The Committee on Prize Essays wishes to once more draw the attention of the members of the Society to the Merritt H. Cash prize of \$100.00, which will be awarded at the next Annual Meeting of the State Society to the author of the best original essay on some medical or surgical subject.

And to the Lucien Howe prize of \$100.00 which will be given for the best original contribution to the knowledge of surgery, preferably ophthalmology.

No award will be made if the essays submitted are not considered worthy the prize.

Essays must be in the hands of the Chairman of the Committee, Dr. A. Vander Veer, 28 Eagle Street, not later than February 15, 1920.

Legislative Notes

The Medical Society of the State of New York herewith presents the list of members of the Senate and Assembly for the year 1920. Members of the Society can refer to this list at any time that it may seem advisable to write to their Assemblymen or Senators in regard to legislative matters. All are requested to look it over so that if there are any known to them personally they can write to them, if requested, to assist or oppose any bills before the Legislature.

SENATE.

1. George L. Thompson, R, Kings Park.
2. John J. Karle, R., 818 Cypress Ave., Brooklyn.
3. Peter J. McGarry, D., Long Island City.

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4. Kenneth F. Sutherland, D., 2834 W. 1st St.
5. Daniel F. Farrell, D., 378 17th St.
6. Loring M. Black, Jr., D., 606 Lincoln Pl.
7. Charles C. Lockwood, R., 954 Greene Ave.
8. Alvah W. Burlingame, Jr., R., 391 Fulton St.
9. Charles E. Russell, D., 246 Jamaica Ave.
10. Jeremiah F. Twomey, D., 151 Java St.
11. Daniel J. Carroll, D., 135 No. Third St.

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14. Bernard Downing, D., 195 Monroe St.
15. Abraham Kaplan, D., 149 Broadway.
16. Joseph D. Kelly, D., 51 Chambers St.
17. Julius Miller, D., 19 E. 98th St.
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19. Edward J. Dowling, D., 230 W. 130th St.
20. William C. Dodge, D., 527 Fifth Ave.

BRONX.

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23. John J. Dunnigan, D., 1861 Holland Ave.

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30. Henry M. Sage, R., Menands.
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34. N. Monroe Marshall, R., Malone.
35. Burt Z. Kasson, R., Gloversville.
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37. Fred B. Pitcher, R., Watertown, 228 Mullin St.
38. J. Henry Walters, R., Syracuse, 935 University Block.
39. Adon P. Brown, R., Leonardsville.
40. Clayton R. Lusk, R., Cortland, 38 W. Court St.
41. Seymour Lowman, R., Elmira, 614 Euclid Ave.
42. Charles J. Hewitt, R., Locke.
43. William A. Carson, R., Rushville.
44. John Knight, R., Arcade.
45. James L. Whitley, R., Rochester, 189 Barrington St.
46. John B. Mullan, R., Rochester, 217 Wellington Ave.
47. George F. Thompson, R., Middleport.
48. Ross Graves, R., Buffalo, 68 Manchester Pl.
49. Samuel J. Ramsperger, D., Buffalo, 232 Emslie St.
50. Leonard W. H. Gibbs, R., Buffalo, 110 Franklin St.
51. J. Samuel Fowler, R., Jamestown.

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2. Charles F. Moss, R., 268 North Pearl St., Albany.
3. Frank L. Wiswall, R., 1410 First Ave., Watervliet.

ALLEGANY.

William Duke, Jr., R., Wellsville.

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2. Edward J. Flynn, D., 529 Courtlandt Ave.
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4. Samuel Orr, S., 833 E. 167th St.
5. William S. Evans, D., 1018 E. 163d St.
6. Thomas J. McDonald, D., 876 E. 224th St.
7. Joseph V. McKee, D., 870 E. 175th St.
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2. Forman E. Whitcomb, R., Union.

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CAYUGA.

L. Ford Hager, R., Victory R. F. D., Red Creek.

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CHEMUNG.

John J. Richford, R., Elmira.

CHENANGO.

Bert Lord, R., Afton.

CLINTON.

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COLUMBIA.

Ransom H. Gillett, R., New Lebanon Center.

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Irving F. Rice, R., Cortland.

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7. Herbert A. Zimmerman, R., 721 Brisbane Bldg., Buffalo.
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FRANKLIN.

Warren T. Thayer, R., Chateaugay.

FULTON-HAMILTON.

Eberly Hutchinson, R., Johnstown.

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15. John J. McLoughlin, D., Station G.
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22. George U. Forbell, R., 561 Grant Ave.
23. Charles Solomon, S., 601 Howard Ave.

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21. John C. Hawkins, R., 228 W. 137th St.
22. Oscar J. Smith, R., 115 Broadway.
23. George N. Jesse, R., 621 W. 179th St.

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2. Alan V. Parker, R., Niagara Falls.

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2. Louis M. Martin, R., Clinton.
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2. Gardner J. Chamberlain, R., 214 W. Borden Ave., Syracuse.
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OSWEGO.

Thaddeus C. Sweet, R., Phoenix.

OTSEGO.

Allen J. Bloomfield, R., Richfield Springs.

PUTNAM.

John P. Donohoe, R., Garrison-on-Hudson.

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3. Edward J. Neary, R., Corona.
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5. Ralph Halpern, R., Richmond Hill.
6. Henry Baum, R., Union Course.

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2. Arthur Cowee, R., Berlin.

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2. George P. Reynaud, D., 14 Rose Ave., New Dorp.

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Jared Van Wagenen, Jr., D., Lawyersville.

SCHUYLER.

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2. Delavan C. Hunter, R., Canisteo.

SUFFOLK.

1. John G. Downs, R., Cutchogue.
2. William G. Carroll, D., Bay Port.

SULLIVAN.

Guernsey T. Cross, D., Callicoon.

TIOGA.

Daniel P. Witter, R., Berkshire.

TOMPKINS.

Casper Fenner, R., Ludlowville.

ULSTER.

Simon B. Van Wagenen, R., Kingston, Sta. R.

WARREN.

Stewart MacFarland, R., Glens Falls.

WASHINGTON.

Eugene R. Norton, R., Granville.

WAYNE.

Charles H. Betts, R., Lyons.

WESTCHESTER.

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2. Walter W. Westall, R., White Plains.
3. Edward J. Wilson, R., Peekskill.
4. Mitchell A. Trahan, Jr., R., Yonkers.
5. George Blakely, R., Yonkers.

WYOMING.

Bert P. Gage, R., Warsaw.

YATES.

James M. Lown, R., Penn Yan.

Medical Society of the State of New York

17 West 43d Street, New York.

January 15, 1920.

The regular annual meeting of the Medical Society of the State of New York will be held on March 23d, 1920, at 8.30 P. M., in the Hotel Pennsylvania, New York City.

GRANT C. MADILL, M. D., *President.*

EDWARD LIVINGSTON HUNT, M. D., *Secretary.*

17 West 43d Street, New York.

January 15, 1920.

The regular annual meeting of the House of Delegates of the Medical Society of the State of New York will be held on the afternoon of March 22, 1920, in Hoosick Hall, New York Academy of Medicine.

GRANT C. MADILL, M. D., *President.*

EDWARD LIVINGSTON HUNT, M. D., *Secretary.*

114TH ANNUAL MEETING.

Tuesday, March 23d, 8.30 P. M.

Hotel Pennsylvania.

Calling the Society to order by the President.

Address of Welcome by the Chairman of the Committee on Arrangements.

Reading of minutes of 113th Annual Meeting, by the Secretary.

President's Address, Grant Madill, M. D., Ogdensburg.

Annual Oration and Addresses.

Reception and Dance.

PRELIMINARY

SCIENTIFIC PROGRAM.

ARRANGED BY THE COMMITTEE ON SCIENTIFIC WORK.

Parker Syms, M. D., Chairman, New York City.

John Ralston Williams, M. D., Rochester.

Claude C. Lytle, M. D., Geneva.

George Birney Broad, M. D., Syracuse.

Marcus Babcock Heyman, M. D., New York.

Arthur Joseph Bedell, M. D., Albany.

A. Clifford Mercer, M. D., Syracuse.

Paul B. Brooks, M. D., Albany.

Edwin McD. Stanton, M.D., Schenectady.

SECTION ON MEDICINE.

Chairman, John R. Williams, M. D., Rochester.

Secretary, Nelson G. Russell, M. D., Buffalo.

Tuesday, March 23d, 2.30 P. M.

Joint Meeting with Section on Public Health,
Hygiene and Sanitation.

"Early Recognition of Pulmonary Tuberculosis" (illustrated), Harry A. Bray, M. D., Ray Brook.

"Industrial Hygiene," Anthony J. Lanza, M. D., United States Public Health Service, Pittsburgh, Pa. (by invitation).

"Preventive Diseases of Adult Life," Eugene L. Fisk, M. D., New York.

"Diphtheria," William H. Park, M. D., New York.

"Scarlet Fever," Edwin H. Place, M. D., Boston, Mass., Superintendent South Department, Boston City Hospital (by invitation).

Discussion, W. H. Baldwin, M. D. (by invitation), Warfield T. Longcope, M. D., Lewis Conners, New York.

Wednesday, March 24th, 9.30 A. M.

Symposium on Vitamines.

Joint Meeting with the Section on Pediatrics.

"Water Soluble Vitamine B.," Thomas B. Osborne, Ph.D., New Haven, Conn. (by invitation).

"Fat Soluble Vitamine A.," Lafayette B. Mendel, Ph.D., New Haven, Conn. (by invitation).

"The Role of Vitamines in Childhood," Alfred F. Hess, M. D., New York.

Discussion, E. V. McCollum, M. D., Baltimore, Md. (by invitation); L. Emmett Holt, M. D., New York; John Howland, M. D., Baltimore, Md. (by invitation); Graham Lusk, Ph.D. (by invitation).

Wednesday, March 24th, 2.30 P. M.

Endocrine.

"Relation of Internal Secretion to External Appearance of the Body," George Draper, M. D., New York.

"Disturbance of Internal Secretion of Sex Glands," William C. Quinby, M. D., Peter Bent Brigham Hospital, Boston, Mass. (by invitation).

Discussion, Walter Timme, M. D., New York; Emil Goetsch, M. D., Baltimore, Md. (by invitation).

Thursday, March 25th, 9.30 A. M.

Symposium on Gastro-Intestinal Disease.

"Practical Chemical Examination in Gastro-Intestinal Disease," Victor Meyer, M. D., New York (by invitation).

"Practical Clinical Examination of Upper Gastro-Intestinal Disease," Allen A. Jones, M. D., Buffalo.

"Dietetic Treatment of Disease of Upper Gastro-Intestinal Tract." Reader to be announced later.

"Drug Treatment of Disease of Upper Gastro-Intestinal Tract," Walter A. Bastedo, M. D., New York.

Discussion, Arthur F. Chace, M. D., New York; Thomas R. Brown, M. D., Baltimore, Md. (by invitation); Abraham H. Aaron, M. D., Buffalo.

Thursday, March 25th, 2.30 P. M.

Joint Meeting with Section on Surgery.

"Recent Advances in the Diagnosis and Treatment of Thyroid Disease Based on the Use of the Adrenal Test," Emil Goetsch, M. D., Baltimore, Md. (by invitation).

"Practical Points in Goiter Surgery," George W. Cottis, M. D., Jamestown.

"Relation Existing between Amount of Gland Removed and Permanence of Relief," George E. Beilby, M. D., Albany.

"Surgical Treatment of Exophthalmic Goiter," Edward Starr Judd, M. D., Rochester, Minn. (by invitation).

"The Complement-Fixation Test for Syphilis," movie film, Charles E. Roderick, M. D., Battle Creek, Mich. (by invitation).

SECTION ON SURGERY.

Chairman, Claude C. Lytle, M. D., Geneva.

Secretary, Ledra Heazlit, M. D., Auburn.

Tuesday, March 23d, 2.30 P. M.

"Tumors of the Breast," Frederick H. Flaherty, M. D., Syracuse.

"Symptomatology of Perforated Duodenal Ulcer," Robert S. Macdonald, M. D., Plattsburg.

"Some Special Phases of Abdominal Surgery," George W. Crile, M. D., Cleveland, Ohio (by invitation).

"Surgical Pathology and Physiology of the Colon from the X-Ray Standpoint, Lantern Slides," James T. Case, M. D., Battle Creek, Mich. (by invitation).

Wednesday, March 24th, 9.30 A. M.

"Abdominal Incisions," Charles W. Hennington, M. D., Rochester.

"Mesenteric Vascular Occlusion," Ross G. Loop, M. D., Elmira.

"Diagnosis of Cholecystitis and Indications for Cholecystectomy," Alexander E. Garrow, M. D., Montreal, Quebec (by invitation).

"Reconstruction of the Hepatic and Common Ducts," Angelo L. Soresi, M. D., New York.

"Lessons of the War," Henry H. M. Lyle, M. D., New York.

Wednesday, March 24th, 2.30 P. M.

"Chronic Osteomyelitis," Ralph Roswell Fitch, M. D., Rochester.

"Backache," Clarence E. Coon, M. D., Syracuse.

"The Application of the Methods Developed During the War to the Treatment of Fractures in Civil Life," Joseph A. Blake, M. D., New York.

"The Abduction Treatment of Fracture of the Neck of the Femur," Royal Whitman, M. D., New York.

"Some of the Errors made in Right Inguinal Fossa (pains) and Mistakes made in 100 Operations for Chronic Appendicitis," Clarence A. McWilliams, M. D., New York, and Harold Barclay, M. D., New York.

Thursday, March 25th, 9.30 A. M.

"Some Pitfalls Encountered in Prostatics," James Newell Vander Veer, M. D., Albany.

"Surgical and Non-Surgical Treatment of the Prostate and Seminal Vesicles in Arthritis." (Lantern Slide demonstration.) Oswald Swinney Lowsley, M. D., New York.

"Urologic Diagnosis in the Practice of the General Surgeon," Leo Buerger, M. D., New York.

"The Role of the Colon Bacillus in Infections of the Kidney," Hugh Cabot, M. D., Ann Arbor, Mich. (by invitation).

"A Type of Cystic Kidney Amenable to Surgical Intervention," Frederick J. Parmenter, M. D., Buffalo.

Thursday, March 25th, 2.30 P. M.**Joint Session with Section on Medicine
Symposium of Goiter.**

"Recent Advances in the Diagnosis and Treatment of Thyroid Disease, Based on the Use of the Adrenal Test," Emil Goetsch, M. D., Baltimore, Md. (by invitation).

"Practical Points in Goiter Surgery," George W. Cottis, M. D., Jamestown.

"Relation Existing between Amount of Gland Removed and Permanence of Relief," George E. Beilby, M. D., Albany.

"Surgical Treatment of Exophthalmic Goiter," Edward Starr Judd, M. D., Rochester, Minn. (by invitation).

"The Complement-Fixation Test for Syphilis," (movie film), Charles E. Roderick, M. D., Battle Creek, Mich. (by invitation).

**SECTION ON OBSTETRICS AND
GYNECOLOGY.**

Chairman, George B. Broad, M. D., Syracuse.

Secretary, Harvey B. Matthews, M. D., Brooklyn.

Tuesday, March 23d, 2.30 P. M.

"Features of Gall Bladder Surgery of Interest to the Obstetrician and Gynecologist," William D. Johnson, M. D., Batavia.

"The Lacerated Cervix-Uteri, What It Means to the Patient, the Obstetrician and the Surgeon," J. Riddle Goffe, M. D., New York.

"Experience with Radium in the Treatment of Chronic Cervicitis," H. Dawson Furniss, M. D., New York.

"Ovarian Therapy," William P. Graves, M. D., Boston (by invitation).

Wednesday, March 24th, 9.30 A. M.

"Sterility," Edward Reynolds, M. D., Boston (by invitation).

"The Essential Features in Differential Diagnosis of Tumors of the Breast," Joseph Colt Bloodgood, M. D., Baltimore (by invitation).

"The Incident of Cancer in the Retained Cervical Stump After Supra-Cervical Hysterectomy," John Osborn Polak, M. D., Brooklyn.

Wednesday, March 24th, 2.30 P. M.

"Radical Removal of Cancer of the Uterus," Reuben Paterson, M. D., Ann Arbor, Mich. (by invitation).

"Uterine Cancer, Its Treatment by Radium," Harold C. Bailey, M. D., New York.

"The Radical Removal of Fibroids," Edward J. Ill, M. D., Newark, N. J. (by invitation).

"The Treatment of Uterine Fibroids and Uterine Hemorrhages by X-Ray and Radium," George E. Pfahler, M. D., Philadelphia, Pa. (by invitation).

Thursday, March 25th, 9.30 A. M.

"The Significance of Syphilis in Prenatal Care and in the Causation of Foetal Death," J. Whitridge Williams, M. D., Baltimore, Md. (by invitation).

"Congenital and Placental Tuberculosis," Charles C. Norris, M. D., Philadelphia, Pa. (by invitation).

"Version," Irving W. Potter, M. D., Buffalo.

SECTION ON EYE, EAR, NOSE AND THROAT

Chairman, Arthur J. Bedell, M. D., Albany.

Secretary, Irving W. Voorhees, M. D., New York.

Tuesday, March 23d, 2.30 P. M.

"What Should Be Our Routine in the Examination of Squint?" Alexander Duane, M. D., New York.

"Treatment of Muscular Anomalies," Edgar S. Thomson, M. D., New York.

Discussion opened by William Zentmayer, M. D., Philadelphia, Pa. (by invitation).

"Muscular Asthenopia," David F. Gillette, M. D., Syracuse.

"The Effect of Intra-Nasal Conditions on the Ocular Muscles," Edwin S. Ingersoll, M. D., Rochester.

Discussion opened by Eugene E. Hinman, M. D., Albany.

Demonstration of the Latest Optical Instruments.

Wednesday, March 24th, 9.30 A. M.

"Some Notes on the Major Complications of Chronic Purulent Otitis," Irving W. Voorhees, M. D., New York.

"Mastoiditis in the Aged," T. Lawrence Saunders, M. D., New York.

"Measurement of Middle Ear Air Pressure," Edmund Prince Fowler, M. D., New York.

Discussion opened by Isidore Friesner, M. D., New York.

"A Case of Brain Abscess," James E. Gage, M. D., Utica.

"The Ocular Symptoms of Wood Alcohol Poisoning," S. Lewis Ziegler, M. D., Philadelphia, Pa. (by invitation).

"Para-specific Therapy in Severe Ocular Infections," Ben W. Key, M. D., New York.

"Advantages of Evisceration over Enucleation," Walter B. Weidler, M. D., New York.

Wednesday, March 24th, 2.30 P. M.

"The Relation of Hypotension and Hypertension of the Membrana Tympani to Deafness and Tinnitus," Harold Hays, M. D., New York.

"Demonstration of the Uses of the Tonsilloscope," Thomas R. French, M. D., and Albert J. Keenan, M. D., Brooklyn.

"Intra-nasal Drainage of the Frontal Sinus through the Natural Openings," Max Unger, M. D., New York.

Discussion opened by Emil Mayer, M. D., New York.

"Cosmetic Surgery of the Nose in Civil Practice," Seymour Oppenheimer, M. D., New York.

Discussion opened by William W. Carter, M. D., New York.

"Chronic Tonsillar Infections," T. Avery Rogers, M. D., Plattsburg.

Thursday, March 25th, 9.30 A. M.

"Endoscopy as a Diagnostic Aid in Diseases of the Upper Air Passages and Esophagus," Charles J. Imperatori, M. D., New York.

Discussion by Sidney Yankauer, M. D., New York.
"Bronchoscopy and Esophagoscopy," John D. Kernan, M. D., New York.

"Sarcoma of the Nose and Naso-pharynx," Thomas H. Farrell, M. D., Utica.

Discussion by Clement F. Theisen, M. D., Albany.
"Treatment of Intra-nasal Suppuration, with Demonstration of Operations on the Cadaver," E. Ross Faulkner, M. D., New York.

SECTION ON NEUROLOGY AND PSYCHIATRY.

Chairman, Marcus B. Heyman, M. D., Ward's Island.
Secretary, Michael Osnato, M. D., New York.

Tuesday, March 23d, 2.30 P. M.

"Spinal Concussion with a Report of a Case," Louis Casamajor, M. D., New York.

Discussion by David E. Hoag, M. D., New York.
"Experiences in Spinal Surgery," Charles A. Elsberg, M. D., New York.

"The Surgical and Neurological Aspects of Peripheral Nerve Injuries" (lantern slides), Byron P. Stookey, M. D., New York (by invitation).

Wednesday, March 24th.

"Further Observations on the Relation of Focal Infection and the Psychoses" (lantern slides), Henry A. Cotton, M. D., Trenton, N. J. (by invitation).

"What the Psychiatrist can Contribute to the Study of the Patient," C. Macfie Campbell, M. D., Baltimore, Md. (by invitation).

"A State Program for the Feeble Minded," Walter E. Fernald, M. D., Waverly, Mass. (by invitation).

"The Place of Psychiatry in Preventive Medicine," Thomas W. Salmon, M. D., New York.

Discussion by George H. Kirby, M. D., New York (by invitation).

Thursday, March 25, 9.30 A. M.

"Infective Neuronitis," Foster Kennedy, M. D., New York.

"The Indications and Contra Indications for Intraspinal Therapy in Neurosyphilis," John A. Fordyce, M. D., New York.

Discussion by Frederick Tilney, M. D., New York.
"Vascular Diseases in Their Relation to Diseases of the Central Nervous System," Edward D. Fisher, M. D., New York.

SECTION ON PEDIATRICS.

Chairman, A. Clifford Mercer, M. D., Syracuse.
Secretary, Robert Sloan, M. D., Utica.

Tuesday, March 23d, 2.30 P. M.

"Social Pediatrics," Henry L. K. Shaw, M. D., Albany.
"The Results of the Presence of Adenoids in Infancy," Rowland G. Freeman, M. D., New York.

"Colic," T. Wood Clarke, M. D., Utica.
"The Mortality Factors in Lobar Pneumonia in Children," LeGrand Kerr, M. D., Brooklyn.

"Sugar," Frank vander Bogert, M. D., Schenectady.

Wednesday, March 24th, 9.30 A. M.

**Joint Meeting with the Section on Medicine.
Symposium on Vitamines.**

"The Water-Soluble Vitamine," Thomas B. Osborne, Ph. D., New Haven (by invitation).

"The Fat-Soluble Vitamine," Lafayette B. Mendel, Ph. D., New Haven (by invitation).

"The Role of Vitamines in Childhood," Alfred F. Hess, M. D., New York.

Discussion, Edward V. McCollom, M. D., Baltimore (by invitation); L. Emmett Holt, M. D., New York; Graham Lusk, Ph.D., New York (by invitation); John Howland, M. D., Baltimore, Md. (by invitation).

Wednesday, March 24th, 2.30 P. M.

Pediatric Clinics in New York Hospitals.

Thursday, March 25th, 9.30 A. M.

Joint Session with Section on Public Health.

"Delayed Emptying of the Stomach in Infants and Young Children," Charles G. Kerley, M. D., New York.
"The Course of the Bacillus from Sputum to the Child," Allen K. Krause, M. D., Baltimore (by invitation).

Discussion by Lawrason Brown, M. D., Saranac Lake.
"The Rollier Treatment of Tuberculosis," illustrated with lantern slides and movie film, Clarence L. Hyde, M. D., Perrysburg.

Discussion opened by Hermann M. Biggs, M. D., Commissioner of Health, New York State.

"Child Care as Reflected by Arts and Crafts," illustrated with lantern slides, John Foote, M. D., Washington, D. C. (by invitation).

Discussion by Henry L. K. Shaw, M. D., Albany.

Thursday, March 25th, 2.30 P. M.

Pediatric Clinics in New York Hospitals.

SECTION ON PUBLIC HEALTH, HYGIENE AND SANITATION.

Chairman, Paul B. Brooks, M. D., Albany.
Secretary, Arthur D. Jaques, M. D., Lynbrook.

Tuesday, March 23d, 2.30 P. M.

Joint Session with Section on Medicine.

"Early Recognition of Tuberculosis," (illustrated), Harry A. Bray, M. D., Ray Brook.

"Industrial Hygiene," Anthony J. Lanza, M. D., United States Public Health Service, Pittsburgh, Pa. (by invitation).

"Preventable Diseases of Adult Life," Eugene L. Fisk, M. D., New York.

"Diphtheria," William H. Park, M. D., New York.

"Scarlet Fever," Edwin H. Place, M. D., Boston, Mass., Supt. South Department, Boston City Hospital (by invitation).

Discussion, W. H. Baldwin (by invitation); Warfield T. Longcope, M. D., New York; Lewis Connors, M. D., New York.

Wednesday, March 24th, 9.30 A. M.

Special Program for Health Officers.

"The New Public Health from the Standpoint of the Health Officer," John E. Safford, M. D., Stamford.

"Securing Moral and Material Support for Local Health Work," Helen L. Palliser, M. D., Poughkeepsie (by invitation).

"Public Health Work as a Vocation; Its Opportunities and Limitations," Isaac W. Brewer, M. D., Watertown.

"Practical Problems of the Health Officer," Frederick G. Metzger, M. D., Carthage.

Wednesday, March 24th, 2.30 P. M.

Special Program for Laboratory Workers.

"The Results of the Use of Antitoxin in the Prevention of Diphtheria," William H. Park, M. D., New York.

"Identification of B. Diphtheriae and Diphtheria-like Organisms," William E. Youland, M. D., Albany (by invitation).

"Confirmatory Tests on Throat Cultures reported as Unsatisfactory owing to the Presence of Organisms Morphologically Atypical," Miss F. C. Stewart, Albany (by invitation).

"Standards in Laboratory Efficiency," Frederic E. Sondern, M. D., New York.

Title to be announced, Joseph S. Lawrence, M. D., Albany (by invitation).

Thursday, March 25th, 9.30 A. M.

Joint Session with Section on Pediatrics.

"Delayed Emptying of the Stomach in Infants and Young Children," Charles G. Kerley, M. D., New York.

"The Course of the Bacillus from Sputum to the

Child," Allen K. Krause, M. D., Baltimore, Md. (by invitation).

Discussion opened by Lawrason Brown, M. D., Saranac Lake.

"The Rollier Treatment of Tuberculosis," illustrated with lantern slides and movie film, Clarence L. Hyde, M. D., Perrysburg.

Discussion opened by Hermann M. Biggs, M. D., Commissioner of Health, New York State.

"Child Care as Reflected by Arts and Crafts," illustrated with lantern slides, John Foote, M. D., Washington, D. C. (by invitation).

Discussion opened by Henry L. K. Shaw, M. D., Albany.

CHILD LABOR DAY.

What are our ideals of childhood?

Health, play, work, education: development of the body, the mind and the spirit. For these things we assume that the community is responsible. The community spends its money for schools and playgrounds and nurses and doctors. In more than half the States we pension the widowed mother so that she may keep her home together. And then having provided certain means of wholesome childhood we leave our job half done and allow the children to slip through our fingers half-educated, half-nourished, to be exploited while they are immature—before they have had their chance.

Child Labor Day will be observed throughout the country on January 25, in churches; 26th, in schools; and 24th in synagogues. Secretary Lane in a recent letter expresses the spirit in which Child Labor Day should be observed. He says: "Child labor will soon be a thing unknown. The child will be given its chance to grow. Work by children on things that are not drudgery and do not impair health or spirits will more and more come to be recognized as educational. 'We know only what we do' is at least more than half true. And the child that trains hand, eye and brain to work together is being educated. Experience has shown that a fixed limit must be set by law, else the exploiters will take advantage of the necessities of the parents. Now, that we are coming to a minimum wage, the necessity will grow less. I can not say, 'Let no child work,' for I believe in the idea of work being put into the heads of the young, and in the value of work to the young—but not monotony, not anything that does not tend to make a more complete citizen in the long run."

The year 1919 marked the passage of the federal child labor law which places a 10 per cent tax on the net profits of establishments employing children under 14 years of age in factories, mills, canneries and manufacturing establishments, of children under 16 in mines and quarries, and of children between 14 and 16 for more than 8 hours a day, six days a week, or at night. The great value of the federal law lies not so much in the number of children it affects, for they are a small proportion of all the children gainfully employed, but in the fact that it makes uniform the laws of the forty-eight States and sets an example for the States to follow in the industries that are not reached by the federal law. It does not apply to the vast number of children regularly employed in agriculture, nor to those working in street trades, department and grocery stores, laundries, amusement places, hotels, restaurants, messenger service and other trades.

The federal judge of the western district of North Carolina has declared the federal law unconstitutional, and the case has been appealed to the Supreme Court. Meanwhile the law is in effect everywhere except in the western judicial district of North Carolina.

The National Child Labor Committee, 105 East 22nd St., New York, will be glad to send information on child labor and suggestions as to the possibilities of effective service in the campaign against this evil.

Medical Society of the State of New York

County Societies

MADISON COUNTY MEDICAL SOCIETY.

ANNUAL MEETING, ONEIDA, N. Y.

Tuesday, October 7, 1919.

The meeting was called to order at the Elks' Temple. There were fourteen members present, Dr. Cavana, President, in the chair.

Minutes of the spring and summer meeting were read and approved. The annual reports of the secretary and treasurer were read and ordered on file.

The following officers were elected: President, Martin Cavana; Vice-President, L. S. Preston; Secretary, G. W. Miles; Treasurer, N. O. Brooks; Censors, W. Taylor, C. H. Perry, M. Cavana; Delegate to State Society, N. O. Brooks.

A resolution was offered by Dr. Miles, for discussion, amending Chapter Two of Section One and Chapter Four of Section Seven, concerning society membership, and same was laid over under the rules until the next annual meeting.

A communication from the Schenectady County Medical Society was read on the subject of Health Insurance and laid over without action.

A very entertaining paper was read by Dr. Cavana as the President's annual address; subject, "The Significance of Temperature in the Study of the Infectious Diseases." This was discussed by several of the members present.

A vote of thanks was passed by the Society to the Lodge of Elks for the use of their pleasant rooms for the meeting.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

ANNUAL MEETING, HUDSON FALLS, N. Y.

Tuesday, October 7, 1919.

The meeting was called to order at 11 A. M. The following members were present: Drs. Budlong, Paris, Banker, Blackfan, Ketchum, Leonard, Byrnes, Huntington, Prescott, Park, Stillman, Heenan, Pashley, McKenzie, Heath, Lee, Davies, Orton, Tenney and La Grange. Visitors present: Drs. C. B. Hawn, Albany; F. S. Honsinger of the State Department of Health, and J. W. Dean, Glens Falls.

The President appointed Drs. Blackfan, Huntington and Byrnes as nominating committee, and the following officers were nominated and elected: President, Harley Heath; Vice-President, Walter A. Leonard; Secretary, Silas J. Banker; Treasurer, Russel C. Paris; Censors, William C. Cuthbert, Harry S. Blackfan, Clifford W. Sumner; Delegate to the State Society, Lewis S. Budlong; Alternate, James T. Park.

The ethics of the Mary McClellan Hospital were discussed, and Drs. Park, Stillman and Byrnes were appointed a committee to investigate the matter.

SCIENTIFIC SESSION.

President's address, Lewis S. Budlong, M.D. Quoted from different authorities showing the importance to the medical profession of opposing all legislation favoring a Compulsory Health Insurance.

Dr. C. B. Hawn gave a résumé of his medical experiences in the military service, and mentioned the efficient work of one of our members, Dr. McSorley. The doctor was given a rising vote of thanks.

Dr. David C. McKenzie gave a very interesting and scientific paper on "Valvular Disease of the Heart."

Dr. Robert H. Lee presented an interesting case in which the autopsy did not clear up the diagnosis.

Dr. F. S. Honsinger gave an interesting talk on the treatment of Gonorrhoea and Syphilis, emphasizing the importance of early treatment for both. The doctor was given a vote of thanks.

THE MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON.

ANNUAL MEETING, GENESEO, N. Y.

Tuesday, October 7, 1919.

The meeting was called to order at 4 P. M. at the Big Tree Inn by the President, Dr. Shaw.

The minutes of the last meeting were read and approved.

The following officers were elected for the ensuing year: President, Frederick A. Wicker; Vice-President, Judson M. Burt; Secretary and Treasurer, G. Kirby Collier; Delegate to State Society, Arthur L. Shaw; Censors, Walter E. Lauderdale; Frederick J. Bowen, John P. Brown, Frederick R. Driesbach and Francis V. Foster.

A report was received from Dr. John P. Brown, Chairman of the Committee on Fee Bill. On motion, duly seconded and carried, the report was accepted, and the Secretary was instructed to have the new fee bill printed and distributed to the members of the Society and to publish as much of it as he thought possible in the newspapers.

The Secretary was also instructed to communicate with the State Hospital Commission, or Attorney General, asking if an examiner in lunacy was qualified to make lunacy examinations in a county in which he was not registered.

After an adjournment for dinner, the Society proceeded to the following scientific session:

Outline of Health Insurance—John H. Pryor, M.D., Buffalo.

History of Health Insurance Legislation Since Its First Introduction in the State Legislature—Senator John Knight, Arcade.

On motion, duly seconded, the Society adjourned and immediately re-convened as a meeting of the Allied Professions, dentists and druggists of the county having been invited to the meeting. Dr. Shaw was made temporary chairman of the meeting and Dr. W. H. Povall, D.D.S., was asked to act as Secretary.

Dr. Pryor gave a short talk on the formation of a Medical Protective League, and at the suggestion of Dr. Pryor a league was formed of the Allied Professions of the county, to include physicians, dentists, druggists and nurses, and a constitution similar to that adopted by the County of Erie and other counties of Western New York was adopted.

The meeting then adjourned.

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

ROCHESTER, N. Y., DECEMBER 22, 1919.

The Annual Meeting of the Medical Society of the County of Monroe was held December 16, 1919.

The meeting was called to order by President E. G. Nugent, at 9 P. M.

The minutes of the last meeting were read and approved.

The minutes of Comitia Minora were read and approved.

The following officers were elected for the ensuing year: President, E. W. Ruggles; Vice-President, G. H. Gage; Secretary, B. J. Duffy; Treasurer, I. E. Harris. Censors: O. E. Jones, A. P. Brady, W. T. Mulligan, E. H. Howard, F. S. Winslow. Delegates to State Society: C. V. Costello, H. L. Prince. Alternates: I. E. Harris, F. S. Winslow. Members of Milk Commission: A. Miller, J. W. McGill. The following new members were elected: Drs. A. J. Guzzetta, J. G. Hart, N. Gorin, R. I. Hagaman.

Dr. E. Nugent read the paper of the evening, on "Some Random Thoughts of Tuberculosis."

TOMPKINS COUNTY MEDICAL SOCIETY.

ANNUAL MEETING, ITHACA, N. Y., TUESDAY, DECEMBER 16, 1919.

The following officers were elected for the ensuing year: President, Martin B. Tinker, M.D.; Vice-President, Harry G. Bull, M.D.; Secretary, Wilber G. Fish, M.D.; Treasurer, J. Wesley Judd, M.D. Censors: Arthur D. White, M.D., Carl F. Denman, M.D., Esther E. Parker, M.D., John S. Kirkendall, M.D., Michael J. Foran, M.D., Delegate to the State Society, Luzerne Coville, M.D.; Alternate, Willets Wilson, M.D.

The following amendment to the By-Laws, having been read at the previous Annual Meeting, was adopted at this meeting:

WHEREAS, The income of this Society is derived entirely from annual dues, which are fixed under the present By-Laws at \$2 per annum per member; and

WHEREAS, Experience has shown that an income inflexibly fixed results at times in financial stringency which can only be relieved by the unsatisfactory method of assessing the members; and

WHEREAS, It would seem that some means should be provided whereby the annual dues may be varied from year to year as changing conditions demand; therefore, be it

Resolved, That Section I, Chapter X, of the By-Laws be, and the same are hereby amended, to read as follows:

"The annual dues for each succeeding year shall be fixed by the Comitia Minora, and shall be announced at the annual meetings; but such annual dues shall at no time be less than \$2 nor more than \$4, and shall be due on the first day of January of each year. At the same time the per capita State assessment as fixed by the House of Delegates for the current year, shall be due."

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN

ANNUAL MEETING, MALONE, N. Y., TUESDAY, NOVEMBER 11, 1919.

The society meeting was called to order by the Vice-President in the Elks' Club, at 12:30, the following members being present: Drs. Grant, Blanchet, Abbott, Finney, Patterson, Van Dyke, Dalphin, Harrigan, White, Harwood, A. L. Rust, Kissane, Wilding, Samson, Wardner and Van Vechten.

Visitors present: Prof. J. M. Elder, Dr. F. A. L. Lockhart of Montreal and Dr. W. Grant Cooper of Ogdensburg.

The minutes of the last meeting were read and approved.

The report of the Comitia Minora were read and approved.

George F. Zimmerman, M.D. Malone, a member in good standing of the St. Lawrence County Medical Society, was transferred to the Franklin County Medical Society, by vote of the Society.

John E. White, M.D., having been nominated for Vice-President, presented his resignation as a member of the board of censors. His resignation was accepted.

The reports of the Secretary and Treasurer were accepted as read.

The following officers were elected for the ensuing year: President, Sidney F. Blanchet, Saranac Lake; Vice-President, John E. White, Malone; Secretary and Treasurer, George M. Abbott, Saranac Lake; Delegate to the State Society, Harry A. Bray, Ray Brook.

The meeting adjourned at one o'clock for dinner.

The Scientific Session was called to order at two o'clock when the following very interesting papers were read and discussed:

"The Problem of the Mentally Unfit," W. Grant Cooper, M.D., Ogdensburg. Discussed by Prof. J. M. Elder of Montreal.

"The Acute Abdomen," Prof. J. M. Elder, Montreal.
"Bone Grafting Into the Spinal Column," J. D. Harrigan, M.D., Malone. Dr. Harrigan presented a very interesting case.

"Two Cases of Cancers of the Lung," Robert C. Patterson, M.D., Saranac Lake. Dr. Patterson showed the pathological specimens of his cases. Discussed by P. F. Dalphin, M.D., Malone.

"Points in Diagnosis of Pulmonary Tuberculosis," Frederick H. C. Heise, M.D., of Trudeau Sanatorium.

MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND.

ANNUAL MEETING AND BANQUET, NYACK, DECEMBER 3, 1919.

The meeting was called to order in the Hotel St. George. The President, Dr. Senigaglia, presided. The banquet table was prettily decorated with chrysanthemums and a very excellent turkey dinner was thoroughly enjoyed by all present.

Drs. E. H. Restin and E. H. Parizot were accepted as members by transfer from the Medical Societies of the County of Westchester and County of Sullivan respectively.

The following officers were elected for the year 1920: President, J. C. Dingman; Vice-President, W. B. Gibb; Secretary, R. O. Clock; Treasurer, Dean Miltimore; Board of Censors, Sengstacken, Laird, DeBaun, Felter and Sanford; Delegate to State Society, G. A. Leitner; Alternate, C. D. Kline.

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

ANNUAL MEETING, ALBANY, N. Y., FRIDAY, DECEMBER 12, 1919.

The meeting was called to order at the Albany County Court House.

The following officers were elected for the ensuing year: President, James N. Vander Veer; Vice-President, George W. Papen; Secretary, Percival W. Harrig; Treasurer, Nelson K. Fromm; Censors, Edward A. Stapleton, W. G. Keens, Joseph A. Lanahan, T. W. Jenkins, Howard E. Lomax; Delegates to the State Society, H. Judson Lipes, Arthur J. Bedell, Joseph L. Bendell; Alternates, T. J. Jenkins, Arthur M. Dickinson, William P. Howard.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

CHILD WELFARE IN KENTUCKY. An Inquiry by the National Child Labor Committee for the Kentucky Child Labor Association and the State Board of Health. Under the Direction of EDWARD N. CLOPPER, Ph.D. Published by the National Child Labor Committee, New York. Price, \$1.25.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number 2 (The New York Number, September, 1919). Octavo of 270 pages, 35 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Published bi-monthly. Price per year: paper, \$10.00; cloth, \$14.00.

INBREEDING AND OUTBREEDING. Their Genetic and Sociological Significance. By EDWARD M. EAST, Ph.D., Harvard University, Bussey Institution, and DONALD F. JONES, Sc.D., Connecticut Agricultural Experiment Station. 46 Illustrations. Published by J. B. Lippincott Company, Philadelphia and London. Price, \$2.50 net.

THE NARCOTIC DRUG PROBLEM. By ERNEST S. BISHOP, M.D., F.A.C.P. Clinical Professor of Medicine, New York Polyclinic Medical School; Member Narcotic Committee, Conference of Judges and Justices of New York State; Committee on Habit Forming Drugs, Section on Food and Drugs, American Public Health Association, etc. Published by the Macmillan Company, New York. Price, \$1.50.

Book Reviews

VENEREAL DISEASES. A Practical Handbook for Students. By C. H. BROWNING, M.D., D.P.H. Director Bland-Sutton Institute of Pathology, Middlesex Hospital, and David Watson, M.D., C.M. Lecturer of Venereal Diseases, Glasgow University; Surgeon in Charge Venereal Department, Glasgow Royal Infirmary and Lock Hospital, Glasgow. Introduction by Sir JOHN BLAND-SUTTON, F.R.C.S. Oxford University Press, 1919. Price, \$6.50.

This book of three hundred pages is one of the Oxford Medical Publications. The type is fine and large, the paper of excellent quality and the illustrations of unusual excellence in so small a volume. There is a clearness and conciseness in the text that make for instructive reading. Any one wishing for a brief but complete account of the present opinions of and practices in treating Syphilis and Gonorrhoea will find it here.

Browning is Director of the Bland-Sutton Institute of Pathology of the Middlesex Hospital, and Watson lectures on Venereal Diseases at Glasgow University. Team work between the pathologist and clinician is absolutely necessary in these times, which is happily illustrated in this book.

The reviewer is often asked by fellow practitioners as to the viability of the spirochete outside the body and so quotes the following: "Outside the body *sp. pallida* is a relatively non-resistant organism, being rapidly killed by drying, weak antiseptics, soap solution; towels infected with a mixed culture and kept moist were found still to contain living spirochetes after exposure to diffuse daylight for eleven and a half hours; blood containing the parasites will remain infective for several days outside the body."

Treatment: "The only proved antisyphilitic drugs are mercury and certain organic arsenical compounds. The three cardinal points governing the efficacy of treatment are: (1) The date of commencing (the earlier the better), (2) the need for vigorous and prolonged treatment, (3) absence of lesions does not necessarily mean cure." (Nor does a negative Wassermann.) The discussion of syphilis of the central nervous system is excellent, and attention is called to the fact, not so well known to many, that "the cerebro-spinal fluid has been found to become normal after intrathecal administration, where intravenous arsenicals and intramuscular mercury had failed to produce this result."

Discussing the value of prophylactic measures, the authors advise the instillation of twenty drops of an unirritating antiseptic into the urethra, after thorough washing of the external parts with soap and water, and the 33 per cent calomel ointment inunction; and state that "if the treatment can be carried out in its entirety within three hours of exposure, safety is almost, if not quite, assured. It is still of value within twenty-four hours of exposure."

The statement that operative relief for acute gonorrhoeal epididymitis is followed by sterility is not always completely correct, for the reviewer knows of one case of double operation in which viable spermatozoa are present.

Under discussion of relief of prostatic abscess the classical operation of Dittel is given, but the technically easier and therefore safer one of Alexander is not mentioned.

STURDIVANT READ.

HYGIENE AND PUBLIC HEALTH. By GEORGE M. PRICE, M.D. Second Edition, thoroughly revised. 12mo. of 280 pages. Philadelphia and New York, Lea & Febiger, 1919. Cloth, \$1.50.

This little hand-book enables the student to secure a rapid survey of the field of hygiene. As stated in the preface epitomization of such a vast subject is difficult to obtain in such a small book, yet it seems that a little more space might have been given to some of the matter in order to more clearly present the subjects. Further elaboration of the Prevention of Infectious Diseases is timely, in the discussion of the control of communicable diseases, but it seems unfortunate that two important phases of public health, such as school hygiene and industrial hygiene are not treated more in detail. The new features in these two sub-fields of public health are so numerous, that it is rather surprising not to see them mentioned.

The great fault in this second edition of the book, is the tendency to use the same matter appearing in the original volume, and not to bring it fully up to date. For instance, on page 68, figures of physical defects found in school children by the New York City Health Department are quoted exactly as they appear in the first volume in 1910, whereas those familiar with these examinations to-day, know that they are considerably modified. In discussing industrial accidents and diseases, figures are quoted several times which date back ten years or more, with no reference to more modern statistics. Consideration of these points would have made this book more valuable.

A. E. S.

ULTRA VIOLET RAYS IN MODERN DERMATOLOGY. Including the Evolution of Artificial Light Rays and Therapeutic Technique. By RALPH BERNSTEIN, M.D., Prof. Dermatology, Hahnemann College, Philadelphia. Published by Achey and Gorrecht, Lancaster, Pa., 1918.

This is the first book on this subject written and published in America; and the author is to be congratulated upon the achievement, for there is a growing interest in the therapeutic possibilities of the ultra violet rays, this interest is especially true of the Dermatologists.

The chapter on light evolution is interesting from the historical standpoint. The portions devoted to the therapeutic application and results are written in an unbiased manner, and there are no evidences of over enthusiasm in the conclusions.

Although a work of this sort necessarily appeals to the cutaneous specialist, any physician could derive much benefit and information from the perusal of its pages.

J. M. W.

THE ANATOMY OF THE PERIPHERAL NERVES. By A. MELVILLE PATERSON, M.D., F.R.C.S., Lieut-Colonel, R.A.M.C., Assistant Inspector of Special Military Surgical Hospitals, Professor of Anatomy in the University of Liverpool, Examiner in Anatomy at the Royal College of Surgeons of England. New York and London, Oxford University Press. 1919.

The author states that the object of his work is to provide a brief account of the peripheral nerves for the use of students and surgeons, especially for those engaged in military orthopedic work.

There is nothing of startling originality shown in the treatment of the subject, but there are certain points which will commend it; it is compact in form, well printed and splendidly illustrated, all of which make it valuable for ready reference. The outstanding feature of the book is the large amount of space given to the embryological development of the peripheral nervous system, an extremely important factor for the proper appreciation and understanding of its ultimate forms.

F. C. E.

A LABORATORY OUTLINE OF EMBRYOLOGY WITH SPECIAL REFERENCE TO THE CHICK AND THE PIG. By FRANK R. LILLIE and CARL R. MOORE. 66 pages. Chicago, University of Chicago Press, 1919.

The authors are Professor of Embryology and Instructor in Zoology respectively in the University of Chicago, and this brochure was originally drafted for the guidance of students at that institution.

The chick and the pig embryos are especially considered as important to the beginning student of medicine.

It pretends to be nothing more than a laboratory guide, and as such it fulfills its purpose.

W. H. DONNELLY.

1918 COLLECTED PAPERS OF THE MAYO CLINIC. Rochester, Minn. Octavo 1196 pages, 442 illustrations. Philadelphia and London: W. B. Saunders Co., 1919. Cloth, \$8.50 net.

This book contains a wealth of information to interest every follower of Hippocrates whatever his special line of endeavor may be.

The enlarged field of the Mayo Clinic is well reflected in the contents, where one may find articles on surgery, medicine, pathology, bacteriology, dermatology, radiography and almost all of the other great divisions included in the healing art.

The list of contributors contains many familiar names such as Mayo, Judd, Balfour, Carman, Rosenow, Braasch, MacCarty, Plummer and others.

No summary can be attempted, but the general excellence of the various papers is impressive. It almost seems as though certain general rules were followed such as: Be brief; Be practical; Be scientific but not pedantic; Be honest.

The report of forty cases of syphilis of the stomach is remarkable for the large number reviewed and is a valuable addition to our knowledge of the subject.

W. J. Mayo's article on The Liver and Its Cirrheses is a studious discussion which would convince anyone that Dr. Mayo is a scholar as well as an operator of unusual ability.

The reproductions of X-Ray plates are splendid and the reader is impressed by the general all around excellence of the radiographic work of Carman.

An important article by Kendall describes the isolation of the active iodine product of the thyroid. This work started eight years ago, has now been completed. Thyroxin has been analyzed, the structural formula determined and the synthesis completed.

Dr. C. H. Mayo says of this work of Plummer and Kendall with thyroxin that it is the most important advance made in medicine of the chemistry of life.

Those who fail to read this book will surely lose much of interest and value.

HENRY F. GRAHAM.

A LABORATORY MANUAL FOR ELEMENTARY ZOOLOGY. By L. H. HYMAN, Dept. of Zoology, University of Chicago, 1919. University of Chicago Press. Price, \$1.50 net.

This manual was prepared for the class in elementary zoology in the University of Chicago and has been used in that course for some time.

It quite naturally will interest mainly those who are doing laboratory work of this nature either as a part of a general college course or a premedical year.

Zoology is well recognized by all teachers of anatomy as being an almost essential preliminary study before going on to the study of the histology or physiology of the human body. As a result this subject is being given more and more attention every year in the medical curricula and their associated premedical courses.

Hyman's work is all that it is meant to be, namely, a laboratory manual for the student.

W. H. D.

ROENTGEN INTERPRETATION. A Manual for Students and Practitioners. By GEORGE W. HOLMES, M.D., and HOWARD E. RUGGLES, M.D. Octavo of 211 pages, illustrated with 181 engravings. Philadelphia and New York: Lea & Febiger, 1919. Cloth, \$2.75.

The authors in their introduction, rightly emphasize the necessity of a medical training and a thorough knowledge of pathology for one who would become proficient in Roentgen interpretation. Attempting to learn this subject from a text-book is very much like studying pathological anatomy without specimens. There is, however, in this work much material to assist the beginner in this specialty. Anatomical variations and abnormalities in the development of the osseous system are fully discussed in the early chapters. The various pathological conditions commonly met are intelligently treated in the succeeding chapters. References to the literature are given at the end of each chapter and are a valuable feature of the book. J. G. W.

THE HEALTH OFFICER. By FRANK OVERTON, M.D., D.P.H., Sanitary Supervisor, N. Y. State Dept. of Health, and WILLARD J. DENNO, M.D., D.P.H., Medical Director of the Standard Oil Company. Octavo of 512 pages, with 51 illustrations. Philadelphia and London: W. B. Saunders Co., 1919. Cloth, \$4.50 net.

The experience of the authors in the public health field is reflected in the number of subjects which is discussed in this volume of 500 pages. It is obviously impossible to consider in such a limited space all of the various activities which are now recognized as within the domain of public health, and with which the health officer must be familiar, it has only been possible to touch very superficially many of the details which one would like to see amplified.

The book is valuable in giving a bird's-eye view to both the health officer and the student training for this special field. If sufficiently interested in any particular phase of the work, they can secure details from more appropriate volumes.

The main purpose of the book is admirably served, for, as the authors state in their preface, "it tells the health officer what to do, how to do it, and why he should do it." In this respect the book fills a long-felt want, and not only should it be in the possession of every health officer, but every general practitioner would do well to secure the volume in order that he may appreciate the close relationship of his every-day problems to those of the general community.

A. E. S.

RATIONAL THERAPY. By OTTO LERCH, A.M., Ph.D., M.D., Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana, Post Graduate Department. Southworth Company, Troy, 1919.

This is a volume of some five hundred pages, 85% of which are devoted to physical therapy. It is seldom one can say physical therapy is irrational, but it should not be assumed that this book contains all that is rational nor only that which is rational. Less than seventy pages are devoted to drug (chemo.) therapy. Evidently this book was visualized when the drug iconoclast threw out his boomerang in an attempt to substitute physical for chemical therapy. As seems very probable, the missile is now returning and will probably destroy many theories evolved since it went its way. Of course there is much merit in physical therapy! Cult after cult are applying it rationally and irrationally and many are "Being done good." Nevertheless, it can be used rationally and to advantage; and this book will serve those who wish to qualify to apply physical means in a rational manner. A practical advantage lies in the fact that the author endeavors to make his methods practical rather than theoretical. No author need hope to issue a volume on physical therapy that meets the approval of all thera-

pists. But it may be said that Dr. Lerch has written clearly and his book should make for a better understanding and application of the commoner forms of physical agents in the treatment of disease.

M. F. DEL.

QUARTERLY MEDICAL CLINICS, April, 1919. A Series of Consecutive Clinical Demonstrations and Lectures. By FRANK SMITHIES, M.D. Volume I, Number 2. Published by the Medicine and Surgery Publishing Co., Inc., St. Louis.

The second issue of this monographic series of clinics strengthens the favorable impression made by the first. There are over two hundred pages of reading matter in the text, and as before, the illustrations, especially the radiographic ones, are a great aid to an intelligent digestion of the case reports.

There are thirteen cases taken up and these are indexed in two ways: first, according to symptomatology, and second, according to diagnosis.

However, in the actual consideration of the cases the former is the method followed.

Full descriptions of laboratory tests, and complete discussion of diet lists are valuable features which were noticeable in the initial number and fortunately carried over into this issue.

This system of clinics provides both pleasant and instructive reading for the internist as well as for the general practitioner.

W. H. DONNELLY.

THE MEDICAL TREATMENT OF CANCER. By L. DUNCAN BULKLEY, A.M., M.D., Senior Physician to the New York Skin and Cancer Hospital. Published by F. A. Davis Co., Philadelphia, 1919. Price, \$2.75 net.

Doctor Bulkley is well known as a consistent and enthusiastic advocate of the medical treatment of cancer, as a result of his firm belief in the metabolic origin of the disease. While criticised by many students of the cancer problem, especially those active in the field of surgery, as one who has made a "hobby" out of this question, and who can see only one side of the case, the writer of this book is a physician of vast experience in cancer work and his opinions must not and can not be lightly set aside.

He quotes numerous statistics to show that in spite of the advance of modern surgery, with a consequent lowering of the mortality rate in many so-called surgical diseases, in the particular instance of cancer the rate has steadily risen in practically every country where it is found.

In view of the failure of surgery to improve the situation, it is unquestionably right that the medical and dietetic treatment of cancer should be given a fair trial either as a substitute for, or as an adjunct to, surgical measures. Most of the chapters in the volume are reprints of articles or lectures of Dr. Bulkley in recent years.

Whether or not one is open to conviction on the merits of the medical treatment of cancer, the book is well worth reading.

W. H. DONNELLY.

Deaths

ALBERT C. BAXTER, M.D., Oswego, died December 1, 1919.

ROBERT M. FULLER, M.D., Schenectady, died December 28, 1919.

WILLIAM S. GOTTHEIL, M.D., New York City, died January 7, 1920.

BENJAMIN SINDEL, M.D., New York City, died January 7, 1920.

MELVIN H. TURNER, M.D., Ticonderoga, died December 12, 1919.

NEW YORK STATE JOURNAL OF MEDICINE

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No. 2

EDITORIAL DEPARTMENT

POLICY OR POLITICS?

IN this present period of revolution and evolution it behooves us to reason logically and act circumspectly, ever bearing in mind that our mission is the healing of the sick.

We have been and are still beset with influences created to lower our prestige and take from us the right of self-determination in the conduct of our own affairs.

Why are we eternally compelled to fight for a just recognition of our contention that medicine should be permitted to hold a position before the public commensurate with its high ideals?

It has been through us that all the basic truths in modern medicine have been established; that some diseases have been eradicated; that most diseases have been rendered amenable to treatment and that surgery has been placed in the realms of the marvelous.

What has been our reward? The glory we feel in our achievements and—self-improvement!

Is there any profession, any labor organization working to destroy the means through which it gains its livelihood?

We make no complaint. We exult in our endeavor to alleviate suffering, but we do demand to be let alone in our way of doing it.

We are beyond the whirling maelstrom of profiteering which infests the purveyors of the material needs of life, from the green grocer to the mine operator. We are satisfied with an income which will permit one's family to live in moderate comfort and to meet the demands of the public to appear to be prosperous whether we are or not. God forbid that we should harbor the thought of the "strike method," the resort of labor to gain its end—let them who will go thirsty, hungry and cold—We are not of that ilk.

We can unite to resent unjust dictation by protest, be it *active* or *passive*.

We do not believe that we are or can become a force in national or state politics—an opinion contrary to the views held by many who think therein lies our salvation.

We are not numerically strong enough, and regrettable as it is to state, there exists a want of union among ourselves. When we say ourselves we mean legally qualified medical practitioners—members of their respective state societies, casting aside as unworthy of considera-

tion unaffiliated practitioners who, if not antagonistic, exhibit a shameful apathy to progress and the legalized healing cults.

The formation of Medical Guilds brought into existence by Compulsory Health Insurance Legislation has more than offset this defective asset by bringing to our support dentists and pharmacists, men of intellect and prominent in every community. We are thus morally stronger than ever before and can expect concerted action if but harmony, a forceful and enviable attribute, will shine benignly over our conferences.

A free interchange of views is always desirable, particularly so where the subject of discussion relates to the health of the community. The voice of the majority should be accepted without subsequent mutterings of rancor and separation into cliques, the bane of some of our societies.

With these facts in view would it not be better for us to hold ourselves aloof from local political affiliations, exercising of course our individual suffrage for the candidate of our predilection, knowing his position on questions affecting our interests.

As a rule opponents to our bills and bills inimical to us come from charitable foundations or bequests—financially strong. They have no hesitation in attempting to exploit some health theory, neither considering nor permitting to stand in their way to its adoption, the possible harm to the exploited—patient and physician.

Fighting under the cloak of charity they win popular favor, and popularity is a good asset in politics.

The expense attending watching health legislation by the State Society, the attendance at Albany of the representatives of the Society; the employment of counsel, printing and sundry other expenses make inroads upon its treasury which with the most economic care just about meets current expenses. We thus lack the sinews of war with which our opponents are well supplied.

What then can we do to oppose what we con-

sider vicious legislation without entering the political arena? In the seeking of a favor, it is a good policy to go direct to the seat of power. We believe that we could gain more by keeping free from all entangling political alliances with candidates for office.

Alliances of this sort are like a double-edged sword cutting both ways. We would not be considered by political parties of much value, as we would be aligned with candidates of opposing factions provided they favored our objective. A candidate that we opposed and who was elected would look with an unfavorable eye upon our request for his support.

If on the other hand we assume a passive attitude and await the results of an election, we can unhampered by pre-election alliances go and ask for a hearing and support from the governor and leaders of both parties. The presentation of our case should be delegated to physicians who stand pre-eminent in the profession and are noted for their interest in civic affairs. Meetings on a personal and friendly footing we believe to be of much greater value than at public hearings. The subject in the minds of the jurist before whom the hearing is conducted will hardly be influenced by the acrimonious debates which usually take place between the partisans—but to the public the hearing gives an appearance of fairness to contestants.

However, where a public hearing is determined upon, not more than two representatives of the Medical Society should appear as pleaders and they should be selected by reason of their power of placing our cause before the assemblage in a logical, calm, dispassionate manner, avoiding accusation and vituperative invective. Dignity will always discount flamboyancy. Furthermore, we believe that we should endeavor to bring the Press to our aid. Newspapers welcome well-written, interesting communications of public interest.

In the discussions at our society conferences information educational to the public is lost for want of publicity. If in addition to these discussions confined within the walls of the hall their results could be made public it would help

to form a public opinion favorable to our cause.

We do not believe that there exists cause for the prevailing pessimism bordering on hysteria. We believe that with the wages labor now receives it will not pauperize itself in accepting compulsory charity, which, should the Health Compulsory Insurance Bill become a law, is just what it will receive, and the medical practitioners will be the donors.

The adequately paid American workman does not want charity. The bill demands the best ethical and medical skill obtainable, and the skilled physician cannot be compelled to be a member of any panel.

YOUNG COLORED WOMEN AS PRACTICAL NURSES

PREJUDICE is hard to overcome. We may inwardly feel that we are unjust in harboring sentiments of antipathy to certain races, or topographical groups, which differ from us in color, religion, or mode of life. Intellect, nobility of thought and human impulses are not the birth-right of the white race alone. Against the stupid, uncouth and unclean we may well feel and display a certain repugnance. When the antitheses of these characteristics exist beneath a black skin prejudice weaves its web and holds us prisoners, at least in some instances, as in the present.

War-time emergencies gave to the colored woman an opportunity to display her worth in many occupations denied to her before, among others that of the practical nurse.

The college trained or high school negro girl is slowly but surely finding recognition in professional and business life. The necessary pre-vocational training for intellectual spheres of labor can now be secured by the negro woman, as well as instruction in skilled industrial pursuits. From the personal, racial and economic points of view the capable negro woman is worthy of consideration and assistance. Those of you who have lived in the South can well remember the gentle kindness of the old negro mammy nurse; her devotion and unwearied vigil when any member of the family was sick—traits

that you do not always find in the highly trained nurses of the present day.

The Young Women's Christian Association now extends to white and black young women short-term special courses of from three to six months in practical nursing, with dispensary and hospital training when possible. The white young women are eagerly sought for by hospitals and dispensaries, but the negro is barred. Miss Rosa Louise Hartly, Educational Secretary of the Y. W. C. A., states: "I made a canvass of the best hospitals of New York and Brooklyn in order to secure even dispensary privileges for our negro students—in vain. In appealing to many prominent physicians I met with sympathetic responses and promises to exert their influence to induce hospitals to change their exclusion policy. The hospital authorities refused to act, giving as their reasons objection on the part of white nurses in training and the difficulty of housing the colored student nurses."

This prejudice or antipathy is not due altogether to the state of bondage of the African in America previous to the civil war, for over one hundred years ago, Charles Lamb, in the *Essays of Elia*, writing on *Imperfect Sympathies*, tells us—"In the Negro countenance you will often meet with strong traits of benignity. I have felt yearnings of tenderness towards some of these faces—or rather masks—that have looked out kindly upon one in casual encounters in the street and highways. I love what Fuller beautifully calls—these 'Images of God cut in ebony'—but I should not like to associate with them, to share my meals and my good-nights with them, because they are black."

We must admit there is urgent need at present for nurses, trained or untrained. It is to be regretted that these young negro women cannot receive bedside training. The sick negro is entitled to receive skilled attention, which would afford a field for employment of a nurse of his own race. As only intelligent and educated colored women are accepted as students, there is no reason why they should not prove efficient.

The foregoing is written in the hope that some of the JOURNAL's readers can by suggestion help to solve the problem.

Original Articles.

BLOOD-CLOT DRESSING IN MASTOIDECTOMY; MODIFIED TECHNIC WHICH INSURES PRIMARY PAINLESS HEALING WITHOUT DEFORMITY; SECOND REPORT.*By GEORGE E. DAVIS, M.D.,
NEW YORK.

THE introduction of the blood-clot into wound cavities to facilitate healing initiated a new era in surgical technic of relative value to the antiseptic methods instituted by Pasteur and Lister. The history and development of this method in the treatment of wounds probably is now familiar to most surgeons, but I regret to acknowledge that its adoption and practice by the aural surgeon have not attained that unanimity which it merits on account of its value in promoting primary healing in the vast majority of cases.

In a former paper¹ advocating a modification of the blood-clot dressing in mastoidectomy, I made mention of the fact that John Hunter² (failing to cite reference) was the first surgeon to observe and make practical application of the physiological principle of the "organized blood-clot" as a foundation for union by the first intention. Since the publication of my paper, in which due credit was given Schede for having established and popularized this method of wound treatment, increased interest seems to have been aroused in this technic, if we may regard the numerous letters of inquiry as a criterion. In fact, a claim as to priority has obtruded itself. Robert T. Morris informed me in a letter, and also cites in one of his *Tomorrow's Topic Series*,³ that he made a public demonstration of this method in Dr. Schede's clinic in Hamburg in 1884, and that Schede opposed the idea at the time but later became interested, made experiments, and published his reports in 1886, preceding Dr. Morris' published reports, and thus gained credit for the method.

However, in this discussion, the question of the priority of the method is not the issue, but to try to discover why the blood-clot dressing, since its adoption in mastoidectomy, has not been more generally recognized and practised. This is difficult to understand when we consider the great advantages accruing from the primary union of the mastoid wound, especially as there is no added risk incurred by the employment of this method, and the percentage of successes is high.

Several reasons suggest themselves. First, the time required to carry out with complete thoroughness the surgical technic insisted upon by the advocates of this method probably is the

chief cause why it is not more frequently employed in the otological clinics and in private practice as well. Moreover, it must be admitted that the element of time consumed in detailed operative technic, with the hope of removing every particle of infected tissue, plus the deleterious effects of prolonged anesthesia, plays an important rôle in exhausting the patient and impairing his natural physiological resistance to both local and general infection. A second cause that perhaps deters many from utilizing the blood-clot method is more or less morbid fear that if the clot becomes septic from products of infection left in a wound which is closed and not provided with drainage, that infection may be communicated to the brain or absorbed into the system. Clinical experience has shown that such fears are unfounded, and that when the clot becomes infected and breaks down, the wound margins also break down, and drainage follows the line of least resistance. The third reason why the method has fallen into disrepute with some surgeons is their failure to obtain satisfactory results in a reasonable percentage of cases. However, the personal equation comes in here, and their failure may not be *prima facie* evidence sufficient to condemn the procedure, but, on the contrary, may be an indictment of imperfect surgical technic.

With the view of doing my bit to meet and overcome some or all of the above objections to the blood-clot dressing as adopted in mastoidectomy, only a short time ago I made a preliminary report¹ of a modification of this method, together with the results in a limited number of cases. The subject is of such essential importance that at the risk of *ennui* I am prompted to submit thus soon a second report, with the hope of helping to reinstate a technic of real value to our science and which, when mastered, will readily supplant the old, and establish a new era in mastoidectomy.

In the further consideration of my modified technic of the blood-clot dressing in mastoidectomy, the discussion will be directed along three lines: first, the intimate anatomical connection between the tympanic cavity and the mastoid antrum and the bearing of this relationship to the infection of the clot; second, the impossibility to extirpate absolutely every particle of pathologic and infected tissue by any *operative* technic; third, and in view of the second contingency, which all, I believe, will concede, the desirability of supplementing the operative or mechanical with a chemical or antiseptic technic, provided the latter may be so employed as not to impair the natural or physiological bactericidal properties of the tissues and the blood-clot.

In accounting for the sources and avenues of infection of the blood-clot dressing in mastoidectomy, we must not lose sight of the fact that the peculiar anatomical construction and relationship

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

of the nose, throat, Eustachian tube, tympanum and mastoid antrum provided the open road for the original infection that produced the mastoiditis. Therefore, in the acute cases, following exenteration of the mastoid antrum and admission of the clot, even where the work in the mastoid proper has been clean and thorough, if the infection in the tympanum has not been removed or blocked, it is not going far afield to infer that infection of the clot may be communicated from the tympanum directly through the aditus ad antrum. And in radical mastoidectomy, infection likewise may be communicated to the clot from the Eustachian tube unless the same has been closed.

As there is no operative technic by which it is possible to close the aditus and block infection from the tympanum to the clot in the antrum, the most simple and logical procedure is to clear all detritus from the aditus, and through it sterilize the tympanum by douching with a sterile salt solution, followed by three per cent iodine solution, first having freely incised the membrana tympani, which incision should extend well up into Schrapnel's membrane posteriorly. The rationale of this step in the technic is to provide drainage for any infective material that may have escaped sterilization by the iodine solution, and to divert it from the antrum into the external auditory canal. Therefore, the anatomical structure and relationship of the tympanum and antrum render it advisable, or rather imperative, to make every effort to disinfect the tympanum and provide drainage into the external canal if we would prevent infection of the clot and the breaking down of the mastoid wound in a large percentage of cases. Naturally this is not so necessary in the old open method where ample drainage is provided, and the wound loosely packed and allowed to heal by granulation or second intention, but, even here, healing is promoted by establishing double-way drainage.

Having provided against direct infection of the clot from the tympanum, let us recur to the consideration of measures to be taken to prevent infection from other sources. All advocates of the blood-clot dressing have emphasized that success depends, for the most part, on complete thoroughness of exenteration of all infective material and, secondly, the bactericidal powers of the blood to neutralize a limited amount of infection that may have been overlooked. It goes without saying that clean and thorough operative technic is a *sine qua non* for good surgical results, and that we are indebted in no small measure to the tissues and the blood in combating sepsis, but in mastoidectomy, as in other radical surgical procedures, we must not forget the fact that long-drawn-out operations, with the hope to expose and remove all products of infection, plus the shock of prolonged anesthesia, lessen the patient's natural resistance to

meet infection. Therefore, I am convinced that any agents, not inimical to the tissues, which expedite our work, and at the same time aid in making and keeping the mastoid wound aseptic, are valuable adjuncts to our armamentarium and technic. I refer to certain antiseptics, as alcohol, iodine, carbolic acid, etc.

The advocacy of antiseptics in my modification of the blood-clot dressing is prompted by the following reasons: First, to make the disinfection of the wound more perfect, since it is impossible to extirpate every particle of infective material by an operative technic, and much valuable time is consumed in such endeavor; second, because their use does not destroy or impair the bactericidal properties of the tissues or the blood-clot as I employ them, and I shall cite authoritative evidence to substantiate this claim; third, to enable the average surgeon, without hospital facilities or trained assistants, to successfully employ the blood-clot technic, and thereby encourage its routine adoption as the standard procedure in mastoidectomy.

First, as regards the difficulty of complete exenteration of all pathologic tissue from infected wounds, especially instructive are W. S. Halsted's observations in an important contribution on the treatment of wounds with special reference to the value of the blood-clot in the management of dead spaces, wherein he discusses operations for tuberculosis of the bones and joints, and operations for bone abscesses.⁴ Hear his comments on the successful results of partial excision of a tuberculous joint . . . "that a tuberculous joint may be perfectly cured even when the diseased tissue has not been thoroughly removed, and surgeons should not congratulate themselves upon having removed all the tuberculous tissue whenever there is no return of the disease. It is impossible to determine with the naked eye the limits of the disease. Of this fact anyone who carefully controls his operative work with the microscope may convince himself. I believe it is an accident of rare occurrence for a surgeon to extirpate absolutely every particle of the tubercular tissue, etc." He further reminds us that "of the wounds which heal primarily probably the majority do so notwithstanding the presence of micro-organisms. Success in the treatment of wounds does not depend alone upon the exclusion of pyogenic micro-organisms from the wounds since operations upon bone abscesses, the walls of which it is, perhaps, never possible to thoroughly disinfect, and upon the suppurating wounds of the soft parts which likewise cannot be thoroughly disinfected were usually attended by perfect organization of blood-clot." And while citing the experiments of Nuttall, Prudden, Buchner, Lubarsch, Stern and others as to the disinfectant properties of the blood toward certain species of bacteria, yet again he advises us that "human

blood serum does not appear to be injurious to the multiplication of the staphylococci and streptococci of suppuration, so that we cannot attribute the beneficial results obtained by healing under the blood-clot to any direct disinfectant properties of the blood upon the pyogenic micrococci, but such properties may come into consideration in the prevention of some other forms of wound infection."

Therefore, from the observations and experiences of such eminent authorities as Halsted, Ochsner, Senn and many others, we must conclude that, from a bacteriological point of view, no technic can be considered perfect. Our good results may be attributed not alone to antiseptics, operative skill, or the bactericidal properties of the blood, nor altogether to the combination of all, but in no small measure to an agency greater than all—the power of Nature to heal and to combat infection. To the degree, then, that we expedite our work consistent with cleanliness and thoroughness, reduce surgical trauma and shock and thereby conserve the natural resistance of the patient—in that measure will we better succeed.

That the employment of the antiseptics expedites our work none hardly will gainsay, and the objections made by some that their use is deleterious to the bactericidal properties of the tissues and the blood-clot, I hold as untenable. On the latter point, Lister⁵ is cited by Halsted⁴ as to the non-deleterious effects of carbolic acid on the organization of a blood-clot which he observed in the treatment of a compound fracture of the leg. While the carbolic acid resulted in the formation of small cavities in the clot which were filled with brown serum, yet the clot was fully organized and converted into living tissue. "Thus the blood which had been acted upon by carbolic acid, though greatly altered in physical character, and doubtless chemically also, had not been rendered unsuitable for serving as a pabulum for the growing elements of new tissue in its vicinity."

Moreover, Halsted⁴ cites case after case in his large experience in the treatment of bone abscesses in osteomyelitis by the blood-clot technic where after exenteration of the sequestrum and the granulations, he painted the bone cavity with pure carbolic acid, then washed the entire wound with a corrosive sublimate solution, 1-1000, following this with a carbolic acid solution of 1-20, when the wounds were completely closed, and most of them healed by first intention.

Ochsner's experiences and results in such cases (*Clin. Surgery*, 1902, p. 436), cited by Reik,⁶ are similar to Halsted's, though the technic is slightly varied. After the removal of the sequestrum and the cleansing of the cavity, he states that: "It has been my custom to apply strong compound tincture of iodine to these surfaces after

the alcohol has been sponged away, and then to close the wound with sutures and apply a large aseptic dressing. If, however, there is doubt about the complete removal of all the infected tissue, it is much wiser to tampon the cavity with iodoform gauze, and if it is found aseptic after a few days, to close the wound by secondary sutures."

Stronger evidence not only as to the utility, but also as to the non-deleterious effect of antiseptics on the bactericidal properties of the tissues and the blood-clot can hardly be adduced, and on this point, which coincides with my observations and experience, we are willing to allow the argument to rest.

Moreover, if the use of antiseptics in suppurating wounds aids disinfection and does not impair the bactericidal properties of the tissues and the blood-clot, my advocacy of their employment in the blood-clot method in mastoidectomy is plausible—I trust convincing—and it is not unreasonable to conclude that by their aid the average surgeon, even when deprived of favorable operative environment, will be enabled to conduct with celerity to a safe consummation a surgical procedure which means so much to his own prestige and more to the welfare, comfort and purse of his patient.

I quote from a former paper¹ the technic of my modification of the blood-clot dressing in mastoidectomy: "All infected and diseased tissue possible consistent with safety is exenterated. In simple mastoidectomy after thorough exenteration of the mastoid and the establishing of free communication from the antrum into the tympanum, a free incision of the membrana tympani is made and with a piston syringe the tympanum is flushed from the mastoid through the canal with 3 per cent iodine solution, and, then with warm alcohol, followed with warm sterile physiologic sodium chloride solution. Then the mastoid is packed with iodoform gauze and closed to the lower angle save for a space that will permit one end of the gauze to protrude.

"In twenty-four hours the packing is withdrawn, and the bleeding occasioned by its withdrawal allowed to fill the wound cavity. If enough blood is not forthcoming, a nick or cut with a knife or the scissors is made in the angle or margin of the flap to supply sufficient blood to fill the cavity.

"The subsequent treatment after turning in the clot in simple mastoidectomy is to close the lower angle of the wound immediately with adhesive plaster, with the removal of the sutures on the second or third day.

"Silkworm gut is used for suture material in this work, and before removal a 3 per cent solution of iodine is applied to prevent possible infection of the blood-clot. The postauricular wound heals in a few days, and as the blood-

clot supports the soft tissues, there results little or no depression or deformity. The middle ear usually ceases to discharge in a week or ten days, though the time occasionally may be longer.

"Following exenteration in radical mastoidectomy, the postauricular wound is closed completely and the mastoid cavity, tympanum and canal are packed with iodoform gauze through the enlarged meatus. The next day the gauze packing is removed and the entire cavity, to the level of the meatus, allowed to fill with blood occasioned by its removal. If sufficient blood is not thus obtained, the tragus is nicked or cut for the balance. The meatus is covered with a film of cotton or layer of sterile gauze, over this sterile petrolatum or other lubricant, and over all adjust an outer dressing which is changed daily. Sutures are removed on the second or third day. Before removing sutures, I always apply 3 per cent iodine along the wound margin and over the sutures, to avoid infecting the deeper tissues and clot as they are being drawn out.

"The clot begins to disintegrate in three or four days. The disintegration may be encouraged by the insertion of a small gauze or cotton wick-drain saturated with 10 per cent solution of phenol glycerine.

"Usually the absorption or disintegration of the clot is complete in two or three weeks, when the bony cavity should be covered with a thin, pink granular membrane which should later become smooth, lustrous and fibrous. Should exuberant granulations appear on the median tympanic wall over the oval and round windows, 50 per cent silver nitrate solution is applied, after the surface has been dried."

REPORT OF CASES

Since my preliminary report I am pleased to state that with the exception of one case, Mrs. H. G., age 24, operated in my service at the New York State Hospital, Central Islip, L. I., my results have been uniformly good. Erysipelas of the wound and face complicated this case forty-eight hours following a radical operation on the right ear, and the clot broke down. The wound was cleansed, but never packed subsequently, and was simply drained by inserting a single wick of sterile gauze with an outer gauze dressing daily. The posterior wound healed in five days, save at the lower angle, which required five days longer. This patient was transferred to another hospital in Boston March 27.

I wish to call attention to an interesting and instructive phenomenon in another case. Mrs. C. S., age 22, was operated on February 6 at the West Side Clinic for acute mastoiditis, right ear. After disinfecting the tympanum with alcohol, and 3 per cent iodine, the mastoid wound

was packed with iodoform gauze and closed to the lower angle. The next day the iodoform packing was removed, but practically no bleeding occurred to fill the cavity. I had forgotten my dressing kit, was without scalpel or scissors, and none was available at the clinic with which to cut the edge of the wound to obtain the desired amount of blood to fill the wound cavity. I decided to close the wound entirely, notwithstanding, and depend upon the exudate of lymph and serum to fill the cavity. The posterior wound healed primarily, and the ear was dry in six days, when the patient left the hospital. In other words, the organization of these exudates, or "secretion clot," took place as promptly and perfectly as did that of the blood-clots in other cases. With my experience in this case, I would be disposed, where the removal of the preliminary iodoform packing does not occasion bleeding sufficient to fill the wound cavity, particularly in children or nervous patients, to close the wound and allow the secretion exudates to fill the wound, since they readily solidify and undergo organization as do the blood-clots. Moreover, with my further observation and experience in the use of the blood-clot method in mastoidectomy with my modified technic, I am more and more impressed with the value of antiseptic cleansing of the wound preliminary to the admission of the clot, and believe when this can be made thorough at the time of the operation, it is feasible to admit the blood-clot at once, and close the wound immediately and completely, and to dispense with the further disinfection of the wound for twenty-four hours with iodoform gauze packing, as previously advised in my first contribution on this subject. However, if there is any doubt as to the complete disinfection of the mastoid wound at the time of the operation, I would advise the iodoform packing of same for twenty-four hours before admitting the clot.

CONCLUSIONS.

I am in hearty accord with Halsted⁴ in his opinion that wound cavities, either clean or suppurative, in either hard or soft tissues, should never be stuffed. "A bone cavity should never be stuffed. . . . Suppurating wounds of soft parts should be treated in the same way. They should not be stuffed." Moreover, in the light of my own observations and experience with the blood-clot dressing in mastoidectomy, I am convinced that antiseptics are not detrimental to the bactericidal properties of the blood-clot, and I believe that complete exenteration of the mastoid cavity, plus thorough antiseptic disinfection of the mastoid and tympanic cavities, allowing the mastoid cavity to fill with blood or tissue exudates which tend to organize and form living

tissue, guarantee primary healing without deformity in most cases.

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Discussion.

DR. THOMAS H. FARRELL, Utica: We are indebted to Dr. Davis for a step forward in the after-treatment of mastoidectomies. His technic emphasizes the importance of careful and thorough removal of all diseased areas at time of operation and his good results are based on this procedure. The relief to patient and surgeon in the after-care as compared with the old method of packing is beyond description, and the resulting appearance is equally satisfactory.

I would like to question, however, the safety of using irrigation through the middle ear as a routine procedure. It is our practice to make a free incision of the membrana tympani in the interest of free drainage of the tympanic cavity, but might there not be danger in irrigation in the face of a possible ulceration of the tympanic wall and underlying structures? The dry wick has always worked well with us; but would not suction in the canal accomplish all that irrigation does, and be safer?

In regard to the secondary operation of incising the wound, in order to fill the mastoid cavity with blood, I am opposed to it as being unnecessary, uncertain and away from simplicity. Our custom is to remove the rubber tissue drain at the end of twenty-four hours; sometimes it is replaced, sometimes the dressing forceps is passed through the lower angle of the wound into the mastoid cavity, which is an efficient way of maintaining drainage when necessary; sometimes the wound is allowed to remain closed as soon as healing occurs, which may happen immediately following the first dressing. We like to see cessation of drainage through the membrana tympani before allowing the mastoid wound to heal. The resulting healing is without deformity and marked only by an almost indistinguishable linear scar.

A typical case is that of C. S., age 30, who was discharged from the army with a perfect bill of health. He presented himself at our office on April 16, stating that following the grippe

two months ago he became deaf in right ear, accompanied by pain and discharge. For three days he had a swelling back of the ear, accompanied with vertigo. There was swelling over the tip of the mastoid, extending down the neck posterior to sterno-mastoid muscle, and discharge of pus from a perforation in Schrapnell's membrane, to which was attached a mass of granulations.

The granulations were removed, and the following day (April 17) a simple mastoid operation performed. The whole tip was necrotic and removed; the sinus was exposed; wound sutured with metal clamps except at lower angle, where a rubber tissue drain was placed, and a wick of narrow gauze placed in canal. These were changed daily. The ear was dry in ten days and the mastoid wound closed in twelve days. I hoped to show this case today, that you might see the nature of the healing, but he has probably been misdirected and has landed in another section.

Taking the last twenty uncomplicated mastoids under our care in the Faxon Hospital, I find the average stay in hospital has been twelve days. The time varied from five to twenty days.

THE AURAL SIGNIFICANCE OF VERTIGO.*

By IRVING WILSON VOORHEES, M.S., M.D.,
NEW YORK CITY.

OUR knowledge concerning our relations in space is derived from three sources: (1) Through kinesthetic sensations supplied through nerves of sensation to the skin, muscles, joints and tendons. (2) Through the six eye muscles in connection with the optic nerve and ciliary muscle. (3) Through the static end-organs, that is, the semi-circular canals and the terminal filaments of the vestibular nerves as affected through movement of the endolymph.

It follows, therefore, that any disturbance in these organs or their central relations which lies outside of the norm of ordinary experience will result in bewilderment or confusion when we try to estimate our spatial position. Both Ewald and Hitzig have tried to set down in definitive form what they understand by the word "dizziness," but they have not clarified the matter thereby. The shortest and, perhaps, the best working definition of dizziness is that it expresses perplexity or uncertainty concerning the position of our bodies in space.

Having cleared up the matter as to what the word dizziness means, we are now in a position to set down some of the general *physiologic principles* of dizziness. These exist in the form of postulates and as they appear in this article

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 6, 1919.

are modified from the published work of Hitzig and his associates. They are as follows:

(1) Dizziness is a subjective symptom consisting of perception of a diminished state of consciousness by the person affected.

(2) The center for its production has not yet been found, but it is supposed to be in the cerebrum. Likewise the nerve paths which connect it with the balance center assumed to exist in the medulla are not yet known.

(3) Function of the dizzy center comes by way of the balance center. In the balance center all stimuli meet which influence the statics or dynamics of the body in any way. To this balance center are conducted the disturbed body sensations.

(4) Out from this balance center go also the objective signs of dizziness.

(5) To these abnormal sensations belong stimuli which go out from the dizzy center, from the eyes, from the vestibule of the labyrinth and from the kinesthetic organs.

(6) Labyrinth stimuli work especially upon the balance center. Experimentally, they are the galvanic, turning, caloric and mechanical reactions.

(7) The labyrinth has a special tonus function upon the body muscles. Increase of this tonus leads to muscle contraction.

(8) This tonus is exaggerated at the cathode, by the movement of endolymph in the horizontal semi-circular canals from the smooth end toward the ampullæ. In the other canals (anterior and posterior vertical) stimulation takes place from the ampulla toward the smooth end. Warmth also increases the tonus function; while all other stimuli diminish it.

(9) Objective dizziness can be produced by exaggerated centripetal stimulation of the balance center. Centrifugal muscle impulses from the balance center can likewise produce dizziness. Dizziness also takes place when the impulses from the cerebellum "miss fire."

(10) The balance center in the medulla and the dizzy center in the cerebrum function either interchangeably or independently. There may be objective dizziness without loss of consciousness; for example, in an animal de-cerebrized. Likewise, there may be subjective sensations of dizziness without loss of consciousness.

(11) Seasickness is produced through stimulation of the vestibular labyrinth. Excitation of the balance center then goes over to the vomiting center. If one could find some means of putting the vestibular labyrinth temporarily out of function without affecting the cochlear function at the same time, it seems likely that seasickness could be controlled.

(12) After ablation of both labyrinths, ani-

mals do not seem to be dizzy, nor can dizziness be produced in them.

Much of the literature on dizziness is indissolubly associated with facts and theories concerning nystagmus. This is an unfortunate thing, for the two are really quite separate and distinct, dizziness being, for the most part, a subjective symptom, while nystagmus is essentially an objective sign. Dizziness is an individual thing, depending upon the excitability of the static organs, and may be diminished or done away with through experience and practice.

Our chief reason for giving some attention to dizziness is that it sometimes acts as a warning signboard which may lead us quite surprisingly to an unsuspected diagnostic entity. In nearly all cases of chronic diseases of the ear, dizziness is mentioned by the patient as an important part of his concept of the clinical picture. It is also pretty generally neglected by the general physician, who ordinarily ascribes it to some disorder of the digestive tract and is content with prescribing a dose of calomel. To the aurist, however, dizziness is a warning sign calling for an extended examination of the ears; and the aurist thinks only of the labyrinth, but he should be ever mindful of the other causes which may be the real exciting elements, the ear being merely the organ through which some other part of the body may be signifying its disharmony.

In fact, the otologist should prefer the word "vertigo," from the Latin *vertere*, to turn, since genuine labyrinth dizziness is always associated with a sensation of turning, or, as is sometimes the case, there is a sensation of surrounding objects turning while the patient feels that he himself remains quite fixed.

Classification of Dizziness.—Dizziness may be (a) simply *functional* or physiologic. For example, an otherwise normal person cannot swing in a hammock or ride backwards in a car without decidedly disagreeable sensations of changed relations in space. Here, too, belong the neurasthenic and ocular types. (b) Dizziness may be merely an *associated symptom*, vague, shadowy, and fairly indescribable. Here we have often to do with the psychic element without any tangible entity. For instance, these associated phenomena are described by various patients in various ways. There may be a sensation of pressure or fullness in the head, weakness, a darkening of the visual field, spots before the eyes, numbness, sinking, swaying, etc. All of these are subjective and must be taken by the examiner as hearsay only. But there is a large group of symptoms which are truly objective and yet scarcely belong in the category of dizziness as such. Such manifestations as nystagmus, loss of consciousness with or without muscular cramps, staggering, increased or diminished pulse rate, palpitation, nausea, vomiting, trembling, blushing and an outbreak of perspiration. These are incidental

merely and have nothing to do with dizziness *per se*. (c) Finally, there is actual *pathologic* dizziness in disease of the labyrinth of the ear, in brain tumors, heart disease, nephritis (uremia), brain syphilis, multiple sclerosis, progressive paralysis, epilepsy, anemia, arteriosclerosis, and, perhaps, a few others. Closely allied to this group are the so-called "intoxication types" attendant upon infections, endocarditis, leukemia, gout, diabetes, alcohol, nicotine poisoning, caffeine, and such drugs as belladonna, quinine and salicylic acid. Along with this group, too, goes "reflex dizziness" from the nose, pharynx and larynx. Wearers of O'Dwyer's tubes and persons suffering from tubes sometimes manifest laryngeal reflex dizziness. An important variety also is that associated with functional or pathologic disorders of the stomach and intestines.

Certain persons are apparently immune from dizziness, although such immunity is most often acquired rather than congenital. Toe dancers show a most extraordinary sense of direction and an unfailing knowledge of their position, even after spinning around for several seconds like a top. The most notable example is, of course, the whirling Dervishes, who are said never to be quite happy unless going through their giddy gyrations.

The types of dizziness of chief concern to the otologist are those associated with intracranial disease or with intralabyrinthine disturbances. It is sometimes very important to the neurologist to rule out the labyrinth before he can be quite sure as to the symptoms which seem to point to some intracranial lesion, and in this work the otologist should prove that his special knowledge is indispensable.

Dizziness is a very common accompaniment of organic brain disease in whatever topographic situation it may be found. Hitzig cites twenty-six tumors of the cerebrum which at some time in their clinical course manifested violent dizziness. In fact, the location of the tumor seemed to have no effect upon the origin and duration of the dizziness. In many instances the anamnesis contained some reference to this symptom; very often it was among the first to be noticed by the patient. It was regularly present when the cerebrum was affected either directly or through pressure. As for the kind of attacks, a series of cases show characteristic signs either of well-formed or rudimentary "epileptic insults." Tumors in the temporal regions do not give rise to dizziness so often as when the site is in the central frontal convolutions. If the tumor was located in the frontal region, or if this area was subjected to direct or indirect irritation, dizziness was an active symptom and was called forth by any sudden change of position of the body. Frequent and severe attacks of dizziness, especially when associated with motor symptoms or paralytic phenomena, should always arouse the

suspicion of participation of the cortex—that part of the cortex in which lie the central convolutions. Regarding the basal ganglia Hitzig reports only one case, namely, that of compression of the optic thalamus, which manifested dizziness. We must, therefore, think chiefly of the frontal lobe or central convolutions in these cerebral cases.

A word must be said here about tumors of the cerebello-pontine angle which have been studied rather assiduously during recent years both by the neurologist and otologist. Among the most prominent symptoms recorded in the histories of these cases are headache, vomiting, dizziness, and impaired hearing. Upon further investigation one finds that preceding the disturbances referable to the cochlear or vestibular apparatus other symptoms existed in the trigeminus, but that dizziness was usually mentioned first.

Cerebellar tumors are commonly ushered in with symptoms of dizziness, especially if the tumor be located in the basal portion of the vermis. Of eleven cerebellar tumors, six were found in the posterior area of the vermis, and five in the hemispheres. Oppenheim has called attention to the fact that changing the position of the head often influences both the dizziness and nystagmus in these cases. Certain it is that dizziness and ataxia persist throughout the course of practically all cerebellar disease.

In locating the site of origin in all intracranial disease everything must be taken into account and given its true weight by differentiation. If, for instance, the caloric test shows the vestibular apparatus to be unexcitable, there is either destruction of the labyrinth or paralysis of the vestibular nerve somewhere along its intracranial course. If, however, previous examination of the ears has determined that loss of caloric irritability is due to acute destruction of the labyrinth, and if the nystagmus continues or becomes stronger, one must fall back upon some intracranial cause for an explanation; for since the nystagmus depends upon tonus of the sound labyrinth it lasts only a short time and then disappears.

Dizziness following upon injuries to the head is quite frequent, especially if the injury involves the labyrinth in any way, such as fracture through the petrous bone. Sometimes there is no apparent injury to any important structure, but the entire clinical picture is one of traumatic neurosis with headache of vague character and great nervous irritability as well as instability. Such patients become dizzy upon turning quickly, bending over, or suddenly changing the position of the body. The symptoms of actual head injury and functional neurosis merge into each other so completely that it requires very astute observation and a keen appreciation of values to differentiate them. Above all, we should beware of the diagnosis of "malingerer" in every case

which does not resolve itself quickly into its actual components; for there is no doubt that much injustice is constantly being done on the part of medical examiners who use malingering as a shibboleth. This is especially true of the compensation cases, ignorant working men, for the most part, who are, of course, anxious to secure the most liberal terms of settlement that can be arranged, and yet can quickly be made to see that by over-emphasizing certain particulars and suppressing others they are in reality doing themselves an injustice. Many of these patients have an intolerance to nearly all irritants. For instance, the body temperature will change quickly upon exposure to the sun, after excessive use of alcohol or tobacco, or even in the presence of digestive disturbances. Such symptoms persist long after all others have vanished, and, therefore, we must examine the labyrinth reactions in all such cases if we are going to put ourselves in a position to form a just estimate of the real elements as distinguished from the purely fantastic or imaginary.

It is important not to overlook that type of dizziness associated with a closed Eustachian tube from an acute post-nasal infection which may extend by continuity into the mouth of the tube or even for some distance into its lumen. Simple inflation and introduction of antiseptic bougies may suffice to clear up the dizziness quite promptly.

Labyrinth dizziness is the type of most interest to the otologist, and it is probably one of the commonest forms met with. The classical picture is that afforded by so-called Menière's disease, which is rare enough as such, but has so fastened itself upon the clinical mind that no mention of dizziness is quite complete without it. From a pathological viewpoint Menière's disease is labyrinthine apoplexy, that is, a hemorrhage into some portion of the labyrinth. In the severe and extensive lesions both the cochlear and vestibular portions of the labyrinth are involved, and we have to do, therefore, with deafness, noises, nystagmus, dizziness, nausea and vomiting. Rarer symptoms are fullness in the head, cerebellar ataxia and diarrhoea. The disease picture is usually a concomitant part of some disorder of the blood, such as pernicious anemia or chlorosis. Occasionally skull fractures with involvement of the petrous portion of the temporal, fissure of the pyramid, or injury of the vestibular nerve, are the very sufficient causes of this type of labyrinth dizziness.

Unfortunately, there is no pathognomonic local sign which distinguishes labyrinth dizziness from that caused by disease in the posterior fossa; for vestibular attacks may be caused, as already mentioned, by stimuli referred from such lesions as tumors remote from the labyrinth. In such cases every diagnostic aid at our command must

be employed, especially the functional tests of labyrinth efficiency.

Attacks of vestibular dizziness are associated with three groups of symptoms: (1) Intensive feeling of dizziness and marked vestibular ataxia. (2) Spontaneous nystagmus of at least second degree severity. (3) Intensive headache at the base of the skull or at the back of the neck, sometimes constant in character.

It is important to know from the history whether the dizziness is associated with a sensation of turning or of the turning of surrounding objects, and whether there was a loss of consciousness and disturbance of equilibrium. In favorable cases it is sometimes possible to observe a dizzy attack. In testing the labyrinth the presence of spontaneous nystagmus must be looked for to avoid confusion with the findings after turning or caloric nystagmus is induced. The ear canal must be first examined to see if a dry perforation exists before doing the caloric irrigation; for we must not convert a dry ear into a discharging one. Various contrivances have been described to secure the thermic tests by other means than water.

Attacks of labyrinth dizziness belong first of all to circumscribed labyrinth disease. The dizziness sets in suddenly, with periods of relief followed by fresh attacks, until finally the patient must consult a physician. Such attacks have been known to persist for years without the true origin in the labyrinth having been discovered. Ruttin mentions a case where dizziness persisted for eight years preceding competent otological examination. As a rule, the cases which must eventually come to operation have experienced attacks of dizziness over a period of from two days to five weeks. In one case the dizziness ushered in a rupture of the labyrinth wall which was determined by a positive fistula test hitherto not demonstrable. Ruttin further says that in fifty cases of circumscribed and diffuse secondary serous labyrinthitis only nine gave no history of dizziness, and of these five were tuberculous. In explanation of the latter Herzog affirms that the tuberculous process goes on so slowly that destruction of the labyrinth in its entirety may take place without producing any symptoms that would bring the patient to the otologist. Such patients are often too ill to pay attention to anything save the gravest disturbances.

In certain cases dizziness is not present when the patient comes for examination but can be elicited by shaking the head or bending it quickly backwards, forwards or sideways. After extirpation of the labyrinth the dizziness usually disappears in from ten to fourteen days.

Throughout this paper I have avoided mention of the association of dizziness and nystagmus. In most of the journal articles dealing with laby-

labyrinth problems dizziness and nystagmus are mentioned together, and hence there has arisen a fusion of ideas which ought to be considered separately and distinctly. Nystagmus is a sign, a very important sign, too, of intralabyrinthine disturbance; dizziness, or, more properly, vertigo, is a symptom, a warning, or suggestive symptom, the full value of which has hardly been sufficiently emphasized. Especially should physicians in general practice investigate the ears in all cases of dizziness and not take it for granted that the intestinal tract alone is responsible therefor.

THE NEUTROPHILIC GRANULES OF THE CIRCULATING BLOOD IN HEALTH AND IN DISEASE.—A PRELIMINARY REPORT.*

By G. S. GRAHAM, M.D.,
ALBANY, N. Y.

THE cytoplasmic granules characteristic of the myeloid cell series occur in the circulating blood of man as three types, neutrophilic, eosinophilic and basophilic. It is probable, however, that only the first two of these types should be considered as true granules in the strict sense of the term. In a paper to appear elsewhere, evidence is brought forward that is believed to indicate strongly that the gamma granule is derived from the eosinophilic and rarely perhaps from the neutrophilic type through some obscure change in the granular substance presumably of a degenerative nature. Under this conception, the type represents only a physiologically inactive pseudo-granule, and its containing cell, the basophile, is not a functional leucocyte, but a degenerating cell probably having no part to play in the general scheme of normal leucocytic activity. The eosinophilic leucocyte participates only to a minor degree in the disturbances of leucocytic equilibrium except in a few well-recognized conditions of somewhat special type, and it is evident that the irritants capable of mobilizing it form a restricted group of noxious substances. The neutrophile remains then not only as the form numerically predominant in normal blood, but also as the most active of the granulocytes in a physiological sense. Upon it falls the main burden of the protective response to toxic conditions affecting the local or general bodily metabolism, and the study of the leucocytic reaction to various acute inflammatory conditions is largely a study of the neutrophilic variation.

During the past twenty years much attention has been devoted to the study of the blood changes consequent upon infection. On the cytologic side such study has concerned itself

very largely with the numerical fluctuations in the leucocytes. At first only the "total" leucocyte count was used, but this was soon supplemented by the more informing "differential" count, and then the correlated study of both these factors appeared as an attempt at the more exact definition of the principles underlying the phenomena of leucocytosis. Despite the great value of these studies, both in the general information derived from them and in the more immediate value of their results as practical and valuable aids in determining questions of diagnosis and prognosis, there still appear many unexplainable discrepancies between the conclusions drawn from the blood count and the clinical course of infectious conditions. It is not to be wondered at that such discrepancies should occur. So far as analogy is concerned, it is, after all, somewhat surprising that we should expect so much from the mere enumeration of the cells in the circulating blood, for such observations leave out of account almost entirely any consideration of the finer morphologic changes that may take place in the cells of the type most concerned in the cellular reaction that is taking place. The blood is a tissue, and the tissue microscopist would scarcely draw any conclusions from an examination of a section in which he had merely counted the number of cells without at the same time noting any changes discoverable in their morphologic appearance. The body tissues in general exhibit characteristic reactions to stimuli entirely comparable with those that may be observed in the blood, but the character of the reaction, the intensity of the stimulus provoking it, and the probable end result of the phenomena set in motion are indicated not only by the number and relative percentage of the various cells present, but also by the morphologic changes evident in the individual cells of the type most concerned. While the analogy cannot be carried over intact into hematology, it may still serve to illustrate the point that we should search for some factors of leucocytic variation other than the merely numerical ones to serve us as guides in the interpretation of the varying blood picture found in disease conditions.

Arneth suggested a morphologic factor when he proposed his "nuclear index" as a basis for the interpretation of the leucocytic response to infection. He postulated that the relative age of a given neutrophile may be judged according to the number of segments exhibited by its nucleus. The nucleus of the earliest or youngest leucocytic form as it enters the blood from the bone marrow is a single mass. This mass subdivides into two, three, four and finally five or more lobes as the cell grows older. Starting from this point, he determined what he believed to be the "nuclear index" of the normal blood, pointed out what he believed to be the effect of

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toxic conditions in causing a relative increase in the younger cell forms, and maintained that in a given case of infectious disease, and particularly in tuberculosis, the degree of toxemia present may be judged according to the extent of the relative increase in the cells of the single or bilobed nuclear types. The validity of Arneth's fundamental conception has not been seriously questioned, and the conclusions based upon it appear to be essentially sound, but the nuclear index has not received any general acceptance as a practical aid in clinical work despite the fact that it is usually admitted, even by those reporting doubtfully or unfavorably upon its use, that the indications derived from it may occasionally be of distinct value both in diagnosis and in prognosis.² Here again it is not surprising that the unsupported figures of the Arneth index should prove misleading in some cases, for we can hardly doubt that there is much more to the mechanism of leucocytosis than the mere question of the age of the individual cells making up its field army.

Continuing the classical analogy a moment longer, may it not be that we should investigate not only the number of our troops, not only their average age, but also their physical condition or fitness? Should we not, in other words, attempt a study of the finer morphologic changes that may occur under conditions of disease not so much in the nucleus as in the cytoplasmic structure? From analogy with the general facts of cellular changes everywhere observed as the result of the action of stimulative or destructive agents upon the body cells, it would be logical to expect that the active and highly sensitive neutrophile should show degenerative cytoplasmic changes as the result of the action upon it of stimuli capable of exciting it to the degree evident in well developed cases of hyperleucocytosis. However active may be the withdrawal of damaged cells from the circulation, it would seem unlikely that the laboring organism of severe infectious toxemia can maintain its circulating leucocytes intact. Reports of observations bearing upon this point are not lacking in the early literature. Cytoplasmic as well as nuclear degenerative changes were reported by the pioneer workers in hematology. In general, these were interpreted as evidences of peptization, coagulation or disintegration of reticulum or hyaloplasm. Added to them were changes affecting the characteristic granules of the marrow cell series. These might consist merely of changes in the staining reaction toward aniline dyes, or the granules might disappear in whole or in part. It is still accepted that degenerative changes of these general types may occur in the cells of the circulating blood in myelogenous leukemia; but, for the most part, hematologists have ceased to give them more than passing attention in the case of the leucocytoses proper.

Occasional references to certain of these changes do continue to appear, but, for the most part, there is an attitude of skepticism toward their recognition. This is due, no doubt, to the realization that such conclusions must be drawn cautiously when they are based merely upon the study of the cells in blood smears. No matter how careful the technic employed in its preparation it is practically impossible to avoid artefact production in the blood film, and added to this difficulty there is the further handicap that the stains in common use are notoriously capricious in their action. This variability in the stain works particularly against the satisfactory study of the granules.

It is exactly in this particular of a successful granule staining that the so-called oxidase or peroxidase methods promise to prove of value, and the striking emphasis laid by them upon the granular content of the neutrophilic cytoplasm inevitably suggests the desirability of reopening the old question as to whether or not changes may be demonstrable in these granules under various conditions of infectious or non-infectious toxemia.

Little is known as to the nature or purposes of the leucocytic granules. They were regarded by Ehrlich as reserve material stored in the cell for eventual use in the processes of cellular metabolism and, on the other hand, they have been regarded by others as some extraneous material having no vital connection with the cell life, or as excretory substances the product of katabolism. Again, they have been considered as of secretory nature, representing a substance specifically elaborated by the cell and having some definite part to play in its general or special physiological activities. Hankin saw in them the source of the alexins, and this idea has been favorably received by other workers. While there is nothing beyond inference and analogy to support one or another opinion as to just what rôle is actually played by the granular substance, the idea that it is concerned in some more or less direct way with the antibacterial or antitoxic defense is at least most attractive. Very marked changes in the granules may readily be determined by the study of leucocytes engaged in phagocytosis, as, for example, in opsonic preparations or in smears of pus. Smears from an active case of gonorrhoea are very satisfactory. When such preparations are stained with a "peroxidase" reagent interesting examples of the more or less complete disappearance of the granules from individual cells may be obtained. While exceptions may occur, it may be stated in general that the granules disappear from the leucocytes progressively as the number of bacterial inclusions in the cell increases. The significance of this granular failure is not clear. It might be explained, perhaps, on the basis of any of the above theories of granular significance.

On the other hand, it may merely indicate a change in the hydrogen ion concentration of the cytoplasm consequent upon phagocytic activity. In any case it seems not impossible that a careful study of the phenomenon might provide findings of some interest.

In the benzidine method of granule staining the benzidine may be said to act toward the granular substance as a color indicator. When it is applied to the leucocytes in the presence of traces of hydrogen peroxide a reaction takes place as a result of which a permanent brown dye is set up, and this becomes fixed in or upon the granule mass. Simple counterstaining completes the procedure necessary for a satisfactory cytological preparation. The method has been described elsewhere⁶ but may be summarized briefly as follows: The perfectly fresh smear is fixed for a few seconds in a fresh mixture of one part of forty per cent formaldehyde in nine parts of ninety-five per cent alcohol, washed in water, and stained in a benzidine solution. This is made up shortly before use by adding a few crystals of chemically pure benzidine (the Merck preparation has been used) and 0.02 c.c. of an active hydrogen peroxide (U. S. P.) to 10 c.c. of forty per cent alcohol. After a standard staining time of five minutes in this solution the preparation is washed thoroughly under the tap, counterstained, washed in water and dried. Methylene blue was originally recommended as the counterstain, but this has been replaced in recent work by an anilin-water thionin solution, which gives a sharper nuclear stain and a more pleasing color tone to the slide in general. It is made up by adding 10 c.c. of a saturated solution of thionin in 75 per cent alcohol to 40 c.c. of anilin-water. The solution keeps well. A sharp nuclear stain may be obtained in about one minute.

Long exposure to the benzidine solution may result in a brownish coloration of the erythrocytes, but no evidence of a non-specific staining of any of the body cells has been observed in blood smears or in tissues treated according to the above technic. Within the recommended exposure time of five minutes, the stain is strongly selective for the leucocytic granular substance. The endothelial leucocyte of the blood stream shows a variable granule content. The leucocytes of the marrow series stand out in bold relief and lend themselves well to morphological study. The granular staining appears to involve a distinct chemical reaction between some granular or cytoplasmic constituent and the indicator or staining agent. In this respect it differs from the usual histological stains, where the reaction is a less specific combination between coagulated cellular material and a pre-formed dye, and it is possible that the present procedure may provide a certain amount

of evidence as to the vital condition of the granule or its containing cell.

The position here taken, it may be pointed out, does not commit us to any dogma as to the nature of the granular substance, nor as to the ultimate explanation of the reaction in question. The leucocytes are credited with harboring a rather formidable array of enzymes. Whether the observed reactions on which these claims are based are due in every case to enzymatic activity or merely to the influence of "unorganized" catalysts of organic or even in some cases of inorganic nature is not certain. So far as concerns the substance responsible for the color reaction that we are considering, the general characteristics exhibited by it, including its susceptibility to the action of certain physical and chemical agents, such as dry heat, sunlight, acids and alkalis, concentrated alcohol, mineral salts, etc., are much like those of the true enzymes, but there are still weighty considerations against its unqualified acceptance as such a body. It is uncertain whether this substance does or does not form a part of the granule mass proper. Presumably it does, but nothing is known certainly as to the facts of the case. Finally, it has been questioned whether we are justified in holding to the older assumption that the reaction involved is one of direct oxidation of the indicator by the granular substance. All these questions are of interest and their solution may go far toward clearing up many questions relating to the leucocytes and their activities, but for our present purposes we may disregard them while holding merely to the empiric observation that under the conditions named above it is possible to stain the leucocytes in such a manner that their granules are prominently displayed.

An examination of the leucocytes in normal blood as stained by the benzidine method will show that not all the neutrophils appear equally supplied with granules. The cytoplasm of the individual cell may be densely crowded with them; again, they may appear in a more open pattern; while in other cases, more or less well defined columns or fields of empty cytoplasm may shine through between the opaque clumps or chains of stained particles. In disease, some of the cells may show very few granules, or may even be entirely devoid of anything but shadowy remnants of them. Comparable changes occur within the tissues in acute inflammatory exudations.

The questions suggested by this variation in the granular quota of the individual leucocytes, and particularly the marked changes occasionally seen in severe infectious toxemia, led some time ago to an attempt at the experimental production of granular changes in the blood of animals. The animal chosen for the work was usually the white rat, since its leucocytes approach those of

man in their granule characteristics more closely than do those of the other small laboratory animals. In the guinea pig and rabbit the "special" granules are few and scattered, even in the normal polymorphonuclear cell, and it is difficult to determine changes in them. Benzol was first chosen as a toxic agent that might be expected to have some direct action upon the leucocytes. It was given by subcutaneous injection to seven rats, and by inhalation to three. In spite of heavy dosage and continued treatment, no leukopenia such as is characteristic of the benzolized rabbit was obtained in the injected animals excepting to a minor degree in one case, nor were any undoubted granule changes determined. There was possible granule failure in the inhalation-treated animals, and in one of these that succumbed after daily exposure for twenty-five days there was a terminal white count of 3,300 and an apparent deficiency of reacting granules in the cells of the bone marrow. A benzol leukopenia was obtained in two rabbits, but no decided granule changes could be made out in the leucocytes of the circulating blood. Similar failure attended the exposure of rabbits and guinea pigs to chloroform narcosis, as well as the treatment of white rats with heavy doses of the X-ray. Somewhat more encouraging results followed the subcutaneous injection of a hemolytic streptococcus and of a freshly isolated staphylococcus into a small series of white rats. The subcutaneous injection of a non-fatal dose of streptococcus was sometimes followed in one or two hours by a definite failure of the granules in the circulating leucocytes, while with recovery from the toxemia the granules reappeared in unusual numbers. On the whole, however, the technical difficulties encountered were found to interfere with any satisfactory study of the blood picture, particularly in regard to the relation of the suggested granule changes to the numerical fluctuations in the white count and the polymorphonuclear percentage, and the study was abandoned. The experimental work thus briefly summarized was carried on two and three years ago. The staining method then employed was probably not so well adapted to its purpose as the one now used, and the extent of the granule change that may be expected to occur was perhaps conceived of as greater than would now be demanded. It is possible that a repetition of the experiments might now yield more illuminating results, but at the time, these were judged to be too inconclusive to warrant further trial, and the added technical difficulties referred to were sufficient to discourage continued work along the experimental line. Instead, such time as could be found has been devoted to a study of human blood in various disease conditions and, with this more favorable material, an attempt has been made to formulate some basis of judg-

ment as to whether any definite changes can be detected.

The difficulty that at once arises in any such attempt lies in the discovery of an adequate standard of measurement. The ideal method would, of course, be that of an extraction of the reacting substance from the leucocytes in a known volume of blood and the exact colorimetric determination of its value by a suitable reagent. Some attempts were made to approach the problem from this side, but these were entirely unsuccessful. Kastle and Amoss⁶ made a somewhat similar attempt some years ago, but concluded that the variable peroxidase values shown by the blood in different diseases were due merely to the variable hemoglobin content present. Since also, as stated above, the exact nature of the color reaction involved is entirely unknown, it seemed for the present more logical to treat the problem purely as one of morphological histology and to attempt a numerical estimation of the extent to which the leucocytes in a given case may have suffered changes in their morphological appearance. Occasional record of previous studies along this line has been encountered in the literature. Klopfer,⁷ using the original Winkler-Schultze oxidase method, studied the tissues from cases of poisoning with gas, hydrocyanic acid, phosphorus, etc., without finding evidence of any change in the normal cellular reactions in the parenchymal cells of fresh unfixed organs. Hatiegan⁷ also used the Winkler-Schultze method in studying the blood in various infectious conditions and concluded that no changes in the leucocytes could be made out. Fiessinger and Rudowska⁸ noted the variable granule content in the individual neutrophils of blood smears stained by their benzidine method and divided these cells into two groups according to the relative abundance of their granules. They state the normal ratio of these groups as 6 per cent of the + or deficient cells and 94 per cent of the ++ or fully granulated forms. The latter vary from 84 per cent to 94 per cent in a series of nine diseases listed, these including: Pneumonia (94 per cent); acute articular rheumatism (86 per cent); tabes (85 per cent); mitral regurgitation (84 per cent); chronic nephritis (94 per cent); acute meningitis (86 per cent). A group of diseases with "diminished reactions" consists of typhoid fever (+ 26 per cent, ++ 74 per cent); pulmonary tuberculosis (+ 55 per cent, ++ 45 per cent) and purpura (+ 36 per cent, ++ 64 per cent). They believed that the granule constitutes a "pivot of reaction about which is concentrated a large part of the leucocytic metabolism," and concluded that the observed loss of granules in varying percentages of the neutrophils in some of the diseases studied indicated a diminished oxidizing capacity on the part of the cells

affected and, therefore, a valuable index of the general bodily condition.

For the present study the neutrophils were arbitrarily divided into four types, according to the abundance of their reacting granules. Type IV was taken as the normal. Here the granules are abundant and heavily stained. They may be so closely crowded within the cell body as to mask the enclosing cytoplasm almost completely. More often, however, particularly in thin smears such as must be used for satisfactory study, the individual granules may be distinguished. They may be scattered uniformly through the cell or may show a beaded arrangement as short chains sometimes disposed radially in certain sectors of the cytoplasmic body. In the lower members of the group, traces of clear cytoplasm may be seen about the nuclear membrane and between the rows or clumps of granules, or even about the individual granules; but, on the whole, the granules impress one as being compact in their arrangement, rather uniform in size and appearance, and arranged in a regular pattern that fills the cell body. Type III shows slight deficiency of the granules. The separation of the stained particles into five or six distinct groups or fields suggested in some of the lower Type IV cells has now become prominent, so that the cell body presents distinct granule-filled sectors outlined by lanes of relatively clear cytoplasm. In the wider portions of the cytoplasmic body the fields may be clearly wedge-shaped with centrally disposed apices, but in the narrower portions of the cell, along the convex surfaces of the nucleus, they become flattened peripherally and lose the wedge shape. There is a distinct perinuclear halo, and small irregular "bald" areas make their appearance, particularly in the marginal cytoplasm normally occupied by one of the smaller granule fields. The granules may appear scattered and somewhat understained, or may show a patchy variation in size and depth of color. Scattered, heavily stained masses may appear that are noticeably larger than the usual forms and have a hazy outline. These hazy or smudgy bodies are perhaps the result of degenerative changes in the granular substance, their characteristic appearance being shared by an increasing percentage of the granules in the cells of the lower types to be described. In Type II there is undoubted loss of reacting granular material. The class has been considered as including cells varying at the top from those showing well marked axial core remnants of the fields typical of Type III down to forms in which only a few of the more central granules of these axes remain in place, the remnant granules occurring as isolated groups whose location suggests the original field pattern. Again, all but one or, at most, two of the fields may have become unrecognizable, or may be represented only by a vague, diffusely stained, apparently non-granular material. The

one or two remaining fields may have a fairly abundant residue of the original granule quota. Type I shows only a few vaguely reacting granule shadows without any suggestion of definite pattern arrangement, or the reacting substance may be represented only by a diffuse brownish haze in portions of the cytoplasm. The nuclei in the latter two types often stain faintly.

To summarize: Type IV is a cell with the maximum granule quota. The pattern is regular and uniform.

Type III is a cell with such slight granule deficiency as may be found in a fair percentage of the cells of normal blood. The granules may appear scattered and rather understained but usually show a well-marked field arrangement and sometimes irregularities in the size and staining of the individual particles. Small areas of cytoplasm may be distinctly bare of granules, particularly in the marginal portion of the cell.

Type II shows undoubted granule loss. This may be general, so that only a skeleton of the field pattern persists, or it may affect individual fields unequally, and one or, at most, two of the groups may be fairly well preserved while the remainder of the cell body is practically bare of reacting substance.

Type I shows complete, or almost complete, loss of granules.

On the basis of this tentative and very arbitrary grouping of neutrophilic types, a preliminary survey was made of the blood from a number of apparently healthy young adults, for the most part students. The cells were classified not only according to their granule content, but also with respect to their nuclear configuration or "Arneth index" values. The latter grouping was included in this survey and also in some of the counts made later on pathological blood, because it was thought that it might offer some check on the granule findings, at least until such time as it might be determined with some reasonableness whether, in the first place, any granule changes are to be expected in mild or severe cases of toxemia, and, secondly, if such changes did appear, what their possible relation might be to another suggested factor of leucocytic variation.

Table 1 presents the preliminary series of counts that were made on healthy individuals. The series is, of course, too small at present to allow any final conclusion to be drawn from the results obtained, and it is, in any case, difficult to appraise the value of figures arrived at as these must be. They can be regarded at the best only as approximations, and further experience may modify the impression gained from them. But in general it would appear that cells of Type I are not to be expected in normal blood and that those of Type II occur but rarely. There is rather wide variation in the proportionate

TABLE 1. GRANULE AND ARNETH INDICES IN APPARENTLY HEALTHY YOUNG ADULTS.

	Granule types.				Arneth types.				
	IV.	III	II	I	1	2	3	4	5
1.	96	4	0.6	0	16	29	44	9	2
2.	94	6	0	0	12	28	44	13	3
3.	90	10	0	0	8	27	45	18	2
4.	89	11	0	0	7	30	46	16	1
5.	88	12	0.3	0	9	22	50	17	2
6.	88	12	0	0	5	26	53	15	1
7.	87	13	0	0	9	29	48	12	2
8.	80	18	2	0	15	28	45	11	1
9.	77	23	0	0	11	38	41	10	0
10.	77	21	2	0	16	25	39	18	2
11.	75	23	2	0	8	33	47	11	1

numbers of Type IV and Type III cells. The significance of this is not clear. The impression has been gained that there may be some correspondence between the Type IV percentage and the robustness of the individual from whom the blood was obtained, the more vigorous and possibly more resistant subjects being most apt to show the higher Type IV averages. This, however, needs verification. There is some question whether the last three counts given in the table should be regarded as normal, although the subjects from whom they were obtained complained of no illness. Two other controls originally accepted as "healthy" showed counts of a parallel order. One of these, a vigorous young man with a granule count of 79-21-0-0, was found to be suffering from an intestinal disturbance, accompanied by slight malaise. The other, presenting a count of 73-25-2-0, was undergoing an exacerbation of a chronic sinusitis. It does not necessarily follow, of course, that moderately low counts are to be explained definitely as the result of slight infection, for there may be other factors entering into the regulation of the individual granule count. Cooke² thought it probable that the Arneth index may vary in different healthy subjects although maintaining a constant level for any given individual, and the same may be true of the granule index. On the whole, it seems probable that a Type IV percentage of 80 or over with practical absence of Type I and Type II varieties may be taken as most likely to outline the range that is to be expected in normal blood. If we accept the first eight counts of Table 1 as meeting this tentative standard, the averages obtained are, for Type IV, 89 per cent; for Type III, 11 per cent. For the same specimens the averages for the Arneth types are, in order, 10.1-27.3-46.8-14-1.75. In counting the nuclear segments the attempt was made to follow the simple standard of judgment stated by Cooke, and despite the very considerable differences in the individual counts of the present table the averages obtained are curiously like those obtained by him in the blood of eighty normal adults, viz., 10.9-25-46.7-15.3-2.1. Arneth's original figures were 5-35-41-17-2. The sum of

the nuclear groups 1 and 2, which is the indicator value actually used in drawing conclusions from the count, becomes in the three results, respectively, 37.4, 35.9 and 40.

Thin smears must be used in making the counts. This precaution is important for obvious reasons. In making the granule grouping only intact cells have been counted. A varying number of cells always found in the blood film show, under the usual stains, a more or less faintly outlined atypical nucleus and a shadowy cytoplasm. They are usually considered as ruptured cells or artefacts. With the benzidine method the granules of such cells are sometimes irregularly stained and more or less deficient. The appearance suggests that they may be, at least in part, degenerating forms, rather than true artefacts, but the usual view has been adhered to, particularly since many of these forms may appear in normal specimens, and only those cells showing compact body and definite outline have been recorded in the counts. The endothelial or "large mononuclear" leucocyte appears to contain a few weakly reacting granules or a considerable number of them. It must not be confused with a neutrophile bearing a single nucleus. The differentiation is sometimes difficult. The eosinophile is readily recognized from the large size, sharply globular outline and obvious refractivity of its granule. Owing to the water solubility of the gamma granule, the basophile appears as an atypical polymorphonuclear cell with faintly stained cytoplasm that shows no structural detail or only a vaguely suggested vacuolation.

The counts given in Table 2 are, in part, from selected cases. That is, the primary question has been that of whether any granule changes can be made out in toxic conditions and, if made out, whether they can be recorded in such a way as to offer a standard of comparison for a particular case or a particular disease. While smears from all available toxic and many non-toxic cases have been examined, therefore, and rough judgment made as to whether or not any granule change could be made out, only those cases were selected for actual count that were most clear-cut on the clinical side and that showed a neutrophilic change considered as of particular interest. Thus, the two cases of tubercular infection tabulated should naturally be accompanied by counts upon cases of pulmonary disease. As a matter of fact, a small series of smears from cases under sanatorium treatment have very recently been obtained. No obvious changes were apparent in them on mere inspection excepting in two advanced cases with active lesions. None of these cases has been charted, the more careful study of these as well as other conditions being reserved for a later time, when it is hoped that a more detailed report may be made. The single count recorded for typhoid fever shows a granule

TABLE 2. GRANULE AND ARNETH INDICES IN INFECTIOUS AND NON-INFECTIOUS TOXIC CONDITIONS

		Granule types.				Arneth types.					Remarks.
		IV	III	II	I	1	2	3	4	5	
1.	Tubercular peritonitis.....	30	60	10	0	18	43	31	7	1	Fourth week. Recovered. Second day. W. B. C. 17,000. 12,000 units antitoxin given during previous 18 hours.
2.	Tubercular osteomyelitis.....	34	55	11	0	25	46	20	9	0	
3.	Typhoid fever.....	4	14	57	25	47	37	14	2	0	
4.	Diphtheria	76	24	0	0	13	42	31	11	3	
5.	Acute alcoholism.....	35	54	11	0	17	42	40	1	0	Moribund. W. B. C. 5,000. Eosinophiles, 1 per cent. Third week. Recovered. W. B. C. 12,000. Eosinophiles, 26 per cent. Third week. Recovered. W. B. C. 20,000. Eosinophiles, 23 per cent.
6.	Uncinariasis	44	48	8	0	2	17	38	39	4	
7.	Trichinosis	2	24	56	18	32	47	14	7	0	
8.	Trichinosis	20	56	24	0	22	45	29	4	0	
9.	Trichinosis	19	42	37	2	53	33	13	1	0	

deficiency more marked than had been expected. The extreme degree of the calculated change is of interest in the light of the subsequent history of the case, which appears to have been that of an uneventful recovery. But one case of diphtheria has been encountered since the method of granule charting was adopted. The patient showed no evidences of toxemia when the blood was examined shortly after entrance into the hospital. It would be highly desirable to secure further counts on toxic cases in view of the granule changes described in this disease many years ago by Ewing⁴ and considered by him at that time as a valuable clinical sign of the patient's condition. The three cases of Trichinosis charted were seen in a hospital during a small epidemic of the disease. Cases 9 and 10 of the table were severely ill but eventually recovered. Case 8 died about twenty-four hours after the blood examination was made. Case 7 is introduced as an example of another parasitic disease. The patient was a young West Indian negro, who presented no clinical symptoms beyond the

characteristic anemia and listlessness of the disease.

Acute lobar pneumonia has shown the most striking neutrophilic changes of any of the diseases studied. Here the variation in the morphology and staining reaction of nucleus and cytoplasm is apparent in the neutrophils of preparations stained by the usual eosinate of methylene blue mixtures, and even the granule changes may be appreciated. Thus, on the basis of an exhaustive study of the disease conducted at the Rockefeller Institute, the statement is made¹ that "the appearance and staining qualities of the white blood cells often reflect the condition of the patient. . . . The nuclei of the (degenerated polymorphonuclear) cells appear fragmented, stain poorly, and the cytoplasm presents an appearance suggesting cloudy swelling. On the other hand, a day or two before crisis . . . there may appear many polymorphonuclear cells . . . (whose) cytoplasm is packed with well staining coarse granules." The present series of cases is too limited to allow of anything

TABLE 3. GRANULE AND ARNETH INDICES IN PNEUMONIA AND ITS SEQUELAE.

		Granule types				Arneth types.					Remarks.
		IV	III	II	I	1	2	3	4	5	
1.	Pneumonia, post influenzal.....	0	27	51	22	36	40	16	8	0	Died same night. W. B. C. 24,800.
2.	Pneumonia, acute lobar.....	57	42	1	0	15	38	29	12	6	
		17	47	32	4	30	28	32	9	1	Same case, two days later. W. B. C. 25,900. Died same night.
3.	Pneumonia, double acute lobar.										
	Protracted course.....	15	53	31	1	20	45	28	7	0	Type IV and streptococcus.
		11	41	34	14	29	38	26	6	1	Same case. Four days later W. B. C. 5,260.
		11	51	29	9	34	40	20	6	0	Eleventh day. Temp. nor- mal. Liquid diet. W. B. C. 5,600.
		51	46	3	0	29	33	28	10	0	Eighteenth day. W. B. C. 8,420.
4.	Pneumonia, delayed resolution.										Boy, fourteen years of age. W. B. C. 23,000.
	Empyema	16	48	34	2	22	31	35	11	1	
5.	Empyema, following post-influenzal pneumonia.....	13	57	29	1	20	38	33	9	0	Slowly convalescent.
6.	Pneumonia, acute lobar.....	78	22	0	0	32	40	24	4	0	Moribund.
7.	Pneumonia, acute lobar.....	90	10	0	0	19	40	25	15	1	Moribund.

more than tentative conclusions, but in general the evidences of leucocytic disintegration reported are fully supported by the findings in benzidine-stained preparations. In cases doing badly there is a marked failure in the number of reacting granules and in the intensity of the color reaction in the surviving ones. This is probably the benzidine picture of the change suggesting "cloudy swelling" in the report quoted. The nuclei stain poorly and there is a decided "shift to the left" in the Arneth index.

Case 1 of Table 3 was one of the first in which the indices were calculated. The patient, an Italian laborer, was admitted to the hospital toward the end of the epidemic of last fall. He was suffering from an acute attack of perfectly typical post-influenzal pneumonia. The blood smears, taken about twelve hours before death, show complete absence of granule Type IV cells, while 22 per cent were reckoned as of Type I. In the fatal Case 2, there is a decided drop in the granule values during the final forty-eight hours of an acute lobar pneumonia, the total leucocytes meanwhile holding a constant level. Case 3 was that of a farmer, 35 years of age, who had been seriously ill for two weeks previous to his entrance into the hospital. He presented a double acute lobar pneumonia with marked prostration. The white count was persistently low.

He was dangerously ill for about a week, after which the temperature fell by lysis, reaching normal at the time of the third count recorded in the table. Despite the marked clinical improvement evident at this time, the granule count seems not to have undergone any material alteration. Distinct return toward the normal is shown, however, in the count taken one week later. The findings indicate the great desirability of a close study of a series of cases with the object of determining whether the curve of variation in the granule index may be found to present any recognizable changes preceding those in the clinical symptoms, or whether they merely accompany or follow the latter. In other words, the question arises whether the index may constitute a symptom having prognostic value. Cases 6 and 7 indicate that, for the present, conclusions may be drawn from the granule picture only with the greatest caution. Both patients were brought into the hospital moribund. The blood smears, obtained within one or two hours before death, show in both a surprisingly high granule count. It might be argued that these are to be considered as cardiac deaths occurring, in a sense, as accidents in patients showing extremely active leucocytic response to the infection, but such an hypothesis could be supported only by extended observation.

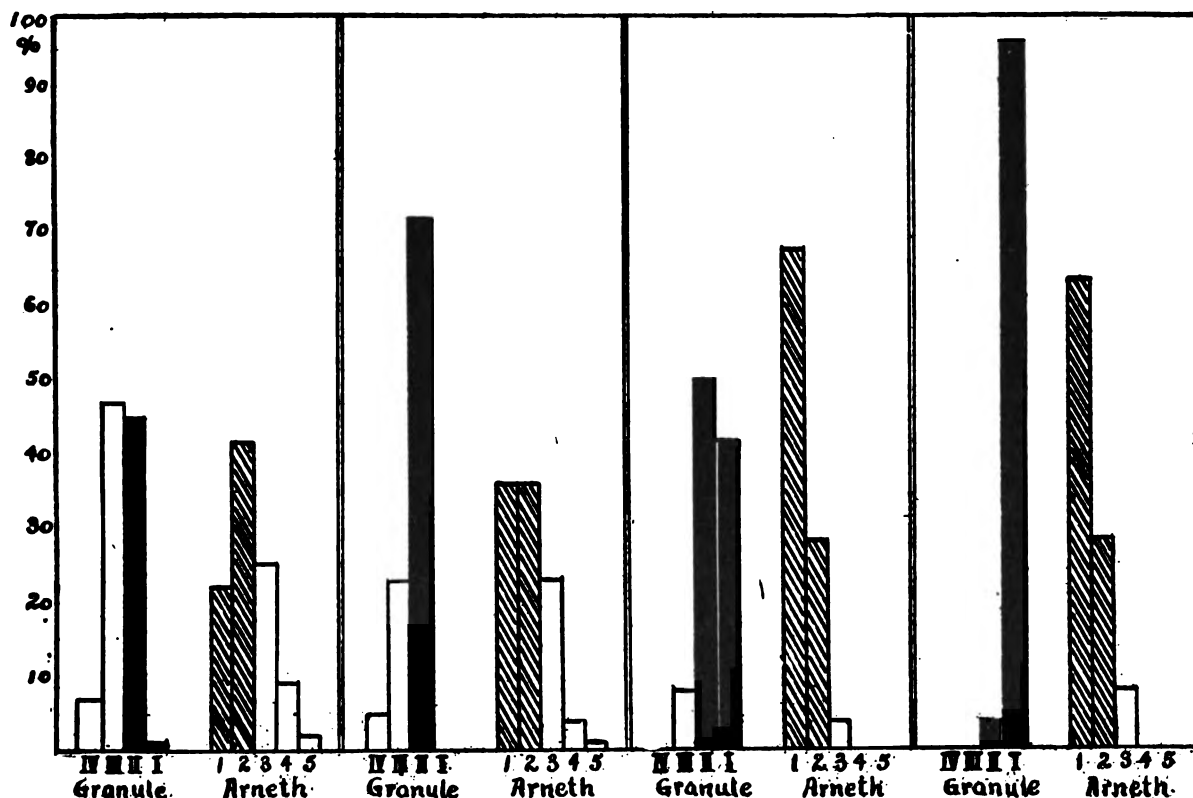


CHART 1. Granule and Arneth indices on successive days in a fatal case of acute lobar pneumonia (Type I). No response to treatment with homologous serum.

The most remarkable case encountered in the present series showed neutrophilic changes represented graphically in Chart I. The patient was a well-developed man of 31 years of age. He was markedly toxic from the time of his entrance into the hospital on the first day of the disease. The white count on entrance was 14,400. On the succeeding days it fell to 8,000, and finally to 6,000. Pneumococcus, Type I, was recovered from the sputum. One hundred c.c. of anti-pneumococcus serum was administered on the second day, and the same amount was administered once on the third day and twice on the fourth day, so that the patient received, in all, 400 c.c. of the homologous serum. So far as could be determined clinically, the treatment had not the slightest influence in combating the overwhelming toxemia, and the patient died late on the fourth day. The granule failure in this case is extreme. The Type IV cells fell from the original count of 7 per cent on the first day to 5 per cent on the second, and completely disappeared on the third day. The Type III cells showed an initial percentage of 47 that fell to 23 on the second day, 8 on the third day, and 0 on the fourth or final day. On the day of death there were 96 per cent of Type I cells and 4 per cent of Type II.

Discussion.

Certain precautions are necessary in applying the benzidine method to the study of the neutrophilic granules. The blood smears used must be as fresh as possible, particularly when there is question of granule failure, since even the cells of normal blood may show perceptible decrease in the granular reaction within twenty-four hours after the films are made. This is particularly true if they have been exposed for any length of time to direct sunlight. It is possible that the blood of some individuals may show this change more quickly than that of others, and smears from cases of myelogenous leukemia several weeks old have been observed in which there was little, if any, decrease in the intensity of the reaction, but no conclusions can safely be drawn as to the granule reaction unless the smears are stained within a few hours at most after they have been made. For the satisfactory calculation of granule groups it is essential that thin smears be used. The compressed cells of a thickly crowded field show only a confused granule mass in which no details can be made out. Finally, the cells in the marginal areas of the smear must be disregarded. The loss of granular reaction is most rapid here and smears more than a few hours old may show a normal staining of the cells in the main body of the surface, while the neutrophils in a peripheral zone one or two immersion fields in width may show a more or less well marked loss of the granular reaction. Particular care must be exer-

cised also in the staining, first, as concerns the solutions employed and, secondly, in the time of exposure to them. When the benzidine method was first used occasional difficulty was encountered that appeared to depend upon some variation in the fixing solution, but this has been absent since neutralized formalin has been used in preparing it. A potent source of trouble lies in the use of an inactive hydrogen peroxide. This may be avoided by occasional titration of the reagent to assure its content of available oxygen. Old benzidine-peroxide solutions give a quicker and deeper reaction than fresh ones. Mixtures not over six to eight hours old have been used as the basis for the present comparative study of the granular reactivity. The method would be simplified if a permanent preservation of the benzidine solution could be secured, and recent trials seem to indicate that this may be possible by storage in a closely stoppered brown glass bottle with or without the addition of a covering layer of petroleum oil. The hydrogen peroxide may be withheld until the solution is needed for use.

The adherence to a standard benzidine staining time of five minutes is highly important. This interval is sufficient for the demonstration of all granules that may reasonably be considered as normal. It fails to allow any but a vague reaction or brings out none at all in the case of some cells in pathological blood. Such cells have been considered as abnormal. But prolongation of the staining time to ten or fifteen minutes may apparently result in a positive reaction on the part of some, at least, of these forms, and it results also in a loss of detail in the granule picture, as though there were some diffusion of the stain through the enveloping cytoplasm. The first change that takes place in the progress of what has been considered as granule failure appears, therefore, to result merely in a lessened activity on the part of the property responsible for the benzidine reaction, although there may finally be complete absence of any demonstrable reaction. In view of the several possibilities of error pointed out, constant control should be exercised through the simultaneous staining of smears of known normal blood along with those whose granule content is to be determined.

The possible relationship of granule changes to variations in the total white count and the polymorphonuclear percentage has been touched upon only incidentally in the cases thus far studied, but it is planned to take up this question in the work now being continued. There has seemed to be a general correspondence in the figures obtained for the granule and for the Arneth indices, this consisting in an increase of the cells of the lower granule types coincidentally with increase in the younger Arneth forms. But while this correlation has provided a certain amount of confidence in the validity of the

present hypothesis that granular failure may take place in toxic conditions, it is doubtful whether continued Arneth counting will justify the time that must be spent upon it. This is particularly true in view of the fact that the thionin-stained nuclei are not as satisfactory for the work as those provided by the usual blood stains, and considerable time and effort must be expended in determining the nuclear type of many of the cells encountered, especially in pathological blood. It is probable that the correlation of granule changes, total white count and polymorphonuclear percentage offers a more practical line of study.

In cases of extreme granular failure such as have been encountered in pneumonia it appears probable that the granular deficiency evident in the leucocytes of the circulating blood may extend back into the bone marrow, since in some cases smears of this tissue appear to react less vigorously than the normal. The myelocytes as well as such leucocytes as may be present share in the granule loss. The phenomena involved here may be concerned in the problem stated by Samuels and Lambert,¹¹ who found marked discrepancies between the state of hyperplasia or aplasia of the marrow and the leucocyte content of the circulating blood in acute lobar pneumonia. Longcope¹⁰ concluded upon the basis of experimental work on rabbits that the marrow cells become exhausted in fatal infections, and it may be that a failure of the benzidine reaction may offer tangible evidence of such an exhaustion. But if the reaction should prove acceptable as such evidence, the condition of the marrow cells at death must be very different under different conditions, since smears obtained from fatal infectious disease of various types may show a reaction on the part of the marrow cells fully as active as any found in non-infectious conditions. In fatal cases without myelocytic granule failure therefore, and in the minor infectious conditions commonly encountered in which a variable deficiency may appear in the circulating leucocytes, it must be assumed that a cell emerging from the marrow with what may be considered as its normal granule content may subsequently undergo a more or less well marked loss of the granular material, or at least of the granular reactivity toward benzidine. The conditions governing this loss have not been determined. It may depend upon changes of a general nature in the blood as a whole, as, for example, variations in the hydrogen ion concentration, or, on the other hand, it may indicate changes in the individual cell's functional activity or vital condition. The fundamental question underlying the whole problem is that as to the nature and significance of the granular substance, and concerning this nothing is known.

In conclusion, the present study, while disregarding many fundamental questions that have

suggested themselves, has concerned itself merely with the search for morphological variations in the leucocytes of the circulating blood as evident in their varying granule picture. The method available for the work suffers, in its present state of development, from certain limitations, and it may eventuate that these are serious enough to prevent the full acceptance of the indications derived from the limited amount of work here reported upon; but it is believed that, with due attention to the precautions noted, the method may serve to emphasize certain features not ordinarily considered in the study of the blood smear, and that these features may prove to be of some interest, if not of direct value in an immediate clinical sense. In another direction, the application of this or a corresponding method to the study of leucocytes engaged in phagocytosis, either within the tissues or in the test tube, might conceivably throw some light upon the mechanism involved in the leucocytic defense against toxic or bacterial agents.

CONCLUSIONS.

The application of a benzidine staining method to blood smears suggests that the neutrophiles of the circulating blood have a characteristic granule content that seems to vary, in health, only within relatively narrow limits. In acute infectious diseases, and possibly in some other toxic conditions, these granules may lose their reactivity toward benzidine to more or less marked degree. It is possible that the study of these granule changes may prove of interest through its bearing upon the general question of the leucocytic defensive mechanism and perhaps through its more immediate employment as a practical aid in the clinical study of disease processes.

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Medical Society of the State of New York

17 West 43d Street, New York.

January 15, 1920.

The regular annual meeting of the Medical Society of the State of New York will be held on March 23d, 1920, at 8.30 P. M., in the Hotel Pennsylvania, New York City.

GRANT C. MADILL, M. D., *President*.

EDWARD LIVINGSTON HUNT, M. D., *Secretary*.

17 West 43d Street, New York.

January 15, 1920.

The regular annual meeting of the House of Delegates of the Medical Society of the State of New York will be held on the afternoon of March 22, 1920, in Hoosick Hall, New York Academy of Medicine.

GRANT C. MADILL, M. D., *President*.

EDWARD LIVINGSTON HUNT, M. D., *Secretary*.

114th ANNUAL MEETING

Tuesday, March 23d, 8.30 P. M.

Hotel Pennsylvania.

Calling the Society to order by the President.

Address of Welcome by the Chairman of the Committee on Arrangements.

Reading of minutes of 113th Annual Meeting, by the Secretary.

President's Address, Grant Madill, M. D., Ogdensburg.

Annual Oration and Addresses.

Reception and Dance.

SCIENTIFIC PROGRAM.

ARRANGED BY THE COMMITTEE ON SCIENTIFIC WORK.

Parker Symms, M. D., Chairman, New York City.

John Ralston Williams, M. D., Rochester.

Claude C. Lytle, M. D., Geneva.

George Birney Broad, M. D., Syracuse.

Marcus Babcock Heyman, M. D., New York.

Arthur Joseph Bedell, M. D., Albany.

A. Clifford Mercer, M. D., Syracuse.

Paul B. Brooks, M. D., Albany.

Edwin McD. Stanton, M.D., Schenectady.

Scientific Sessions, Waldorf-Astoria and Hotel McAlpine

SECTION ON MEDICINE.

Chairman, John R. Williams, M. D., Rochester.

Secretary, Nelson G. Russell, M. D., Buffalo.

Tuesday, March 23d, 2.30 P. M.

Joint Meeting with Section on Public Health, Hygiene and Sanitation.

"Early Recognition of Pulmonary Tuberculosis" (illustrated), Harry A. Bray, M. D., Ray Brook.

"Industrial Hygiene," Anthony J. Lanza, M. D., United States Public Health Service, Pittsburgh, Pa. (by invitation).

"Preventive Diseases of Adult Life," Eugene L. Fisk, M. D., New York.

"Diphtheria," William H. Park, M. D., New York.

"Scarlet Fever," Edwin H. Place, M. D., Boston, Mass., Superintendent South Department, Boston City Hospital (by invitation).

Discussion, W. H. Baldwin, M. D. (by invitation), Warfield T. Longcope, M. D., Lewis Conners, New York.

Wednesday, March 24th, 9.30 A. M.

Symposium on Vitamines.

Joint Meeting with the Section on Pediatrics.

"Water Soluble Vitamine B.," Thomas B. Osborne, Ph.D., New Haven, Conn. (by invitation).

"Fat Soluble Vitamine A.," Lafayette B. Mendel, Ph.D., New Haven, Conn. (by invitation).

"The Role of Vitamines in Childhood," Alfred F. Hess, M. D., New York.

Discussion, E. V. McCollum, M. D., Baltimore, Md. (by invitation); L. Emmett Holt, M. D., New York; John Howland, M. D., Baltimore, Md. (by invitation); Graham Lusk, Ph.D. (by invitation).

Wednesday, March 24th, 2.30 P. M.

Endocrine.

"Relation of Internal Secretion to External Appearance of the Body," George Draper, M. D., New York.

"Disturbance of Internal Secretion of Sex Glands," William C. Quinby, M. D., Peter Bent Brigham Hospital, Boston, Mass. (by invitation).

Discussion, Walter Timme, M. D., New York; Emil Goetsch, M. D., Baltimore, Md. (by invitation).

Thursday, March 25th, 9.30 A. M.

Symposium on Gastro-Intestinal Disease.

"Practical Chemical Examination in Gastro-Intestinal Disease," Victor Meyer, M. D., New York (by invitation).

"Practical Clinical Examination of Upper Gastro-Intestinal Disease," Allen A. Jones, M. D., Buffalo.

"Dietetic Treatment of Disease of Upper Gastro-Intestinal Tract." Reader to be announced later.

"Drug Treatment of Disease of Upper Gastro-Intestinal Tract," Walter A. Bastedo, M. D., New York.

Discussion, Arthur F. Chace, M. D., New York; Thomas R. Brown, M. D., Baltimore, Md. (by invitation); Abraham H. Aaron, M. D., Buffalo.

Thursday, March 25th, 2.30 P. M.

Joint Meeting with Section on Surgery.

"Recent Advances in the Diagnosis and Treatment of Thyroid Disease Based on the Use of the Adrenal Test," Emil Goetsch, M. D., Brooklyn (by invitation).

"Practical Points in Goiter Surgery," George W. Cottis, M. D., Jamestown.

"Relation Existing between Amount of Gland Removed and Permanence of Relief," George E. Beilby, M. D., Albany.

"Surgical Treatment of Exophthalmic Goiter," Edward Starr Judd, M. D., Rochester, Minn. (by invitation).

"The Complement-Fixation Test for Syphilis," movie film, Charles E. Roderick, M. D., Battle Creek, Mich. (by invitation).

SECTION ON SURGERY.

Chairman, Claude C. Lytle, M. D., Geneva.

Secretary, Ledra Heazlit, M. D., Auburn.

Tuesday, March 23d, 2.30 P. M.

"Tumors of the Breast," Frederick H. Flaherty, M. D., Syracuse.

"Symptomatology of Perforated Duodenal Ulcer," Robert S. Macdonald, M. D., Plattsburg.

"Some Special Phases of Abdominal Surgery," George W. Crile, M. D., Cleveland, Ohio (by invitation).

"Surgical Pathology and Physiology of the Colon from the X-Ray Standpoint, Lantern Slides," James T. Case, M. D., Battle Creek, Mich. (by invitation).

Wednesday, March 24th, 9.30 A. M.

"Abdominal Incisions," Charles W. Hennington, M. D., Rochester.

"Mesenteric Vascular Occlusion," Ross G. Loop, M. D., Elmira.

"Diagnosis of Cholecystitis and Indications for Cholecystectomy," Alexander E. Garrow, M. D., Montreal, Quebec (by invitation).

"Reconstruction of the Hepatic and Common Ducts," Angelo L. Soresi, M. D., New York.

"The Value of Position in the Operative Treatment of Hernia," Henry H. M. Lyle, M. D., New York.

Wednesday, March 24th, 2.30 P. M.

"Chronic Osteomyelitis," Ralph Roswell Fitch, M. D., Rochester.

"Backache," Clarence E. Coon, M. D., Syracuse.

"The Application of the Methods Developed During the War to the Treatment of Fractures in Civil Life," Joseph A. Blake, M. D., New York.

"The Abduction Treatment of Fracture of the Neck of the Femur," Royal Whitman, M. D., New York.

"Some of the Errors made in Right Inguinal Fossa (pains) and Mistakes made in 100 Operations for Chronic Appendicitis," Clarence A. McWilliams, M. D., New York, and Harold Barclay, M. D., New York.

Thursday, March 25th, 9.30 A. M.

"Some Pitfalls Encountered in Prostatics," James Newell Vander Veer, M. D., Albany.

"Surgical and Non-Surgical Treatment of the Prostate and Seminal Vesicles in Arthritis." (Lantern Slide demonstration.) Oswald Swinney Lowsley, M. D., New York.

"Urologic Diagnosis in the Practice of the General Surgeon," Leo Buerger, M. D., New York.

"The Role of the Colon Bacillus in Infections of the Kidney," Hugh Cabot, M. D., Ann Arbor, Mich. (by invitation).

"A Type of Cystic Kidney Amenable to Surgical Intervention," Frederick J. Parmenter, M. D., Buffalo.

Thursday, March 25th, 2.30 P. M.

**Joint Session with Section on Medicine
Symposium of Goiter.**

"Recent Advances in the Diagnosis and Treatment of Thyroid Disease, Based on the Use of the Adrenal Test," Emil Goetsch, M. D., Brooklyn (by invitation).

"Practical Points in Goiter Surgery," George W. Cottis, M. D., Jamestown.

"Relation Existing between Amount of Gland Removed and Permanence of Relief," George E. Beilby, M. D., Albany.

"Surgical Treatment of Exophthalmic Goiter," Edward Starr Judd, M. D., Rochester, Minn. (by invitation).

"The Complement-Fixation Test for Syphilis," (movie film), Charles E. Roderick, M. D., Battle Creek, Mich. (by invitation).

**SECTION ON OBSTETRICS AND
GYNECOLOGY.**

Chairman, George B. Broad, M. D., Syracuse.

Secretary, Harvey B. Matthews, M. D., Brooklyn.

Tuesday, March 23d, 2.30 P. M.

"Features of Gall Bladder Surgery of Interest to the Obstetrician and Gynecologist," William D. Johnson, M. D., Batavia.

"The Lacerated Cervix-Uteri, What It Means to the Patient, the Obstetrician and the Surgeon," J. Riddle Goffe, M. D., New York.

"Experience with Radium in the Treatment of Chronic Cervicitis," H. Dawson Furniss, M. D., New York.

"Ovarian Therapy," William P. Graves, M. D., Boston (by invitation).

Wednesday, March 24th, 9.30 A. M.

"Sterility," Edward Reynolds, M. D., Boston (by invitation).

"The Benign Blue Dome Cyst of the Female Breast," Joseph Colt Bloodgood, M. D., Baltimore (by invitation).

"The Incident of Cancer in the Retained Cervical Stump After Supra-Cervical Hysterectomy," John Osborn Polak, M. D., Brooklyn.

Wednesday, March 24th, 2.30 P. M.

"Radical Removal of Cancer of the Uterus," Reuben Peterson, M. D., Ann Arbor, Mich. (by invitation).

"The Radical Removal of Fibroids," Edward J. Ill, M. D., Newark, N. J. (by invitation).

"The Treatment of Uterine Fibroids and Uterine Hemorrhages by X-Ray and Radium," George E. Pfahler, M. D., Philadelphia, Pa. (by invitation).

Thursday, March 25th, 9.30 A. M.

"The Significance of Syphilis in Prenatal Care and in the Causation of Foetal Death," J. Whitridge Williams, M. D., Baltimore, Md. (by invitation).

"Congenital and Placental Tuberculosis," Charles C. Norris, M. D., Philadelphia, Pa. (by invitation).

"Version," Irving W. Potter, M. D., Buffalo.

SECTION ON EYE, EAR, NOSE AND THROAT

Chairman, Arthur J. Bedell, M. D., Albany.

Secretary, Irving W. Voorhees, M. D., New York.

Tuesday, March 23d, 2.30 P. M.

"What Should Be Our Routine in the Examination of Squint?" Alexander Duane, M. D., New York.

"Treatment of Muscular Anomalies," Edgar S. Thomson, M. D., New York.

Discussion opened by William Zentmayer, M. D., Philadelphia, Pa. (by invitation).

"Muscular Asthenopia," David F. Gillette, M. D., Syracuse.

"The Effect of Intra-Nasal Conditions on the Ocular Muscles," Edwin S. Ingersoll, M. D., Rochester.

Discussion opened by Eugene E. Hinman, M. D., Albany.

Demonstration of the Latest Optical Instruments.

Wednesday, March 24th, 9.30 A. M.

"Some Notes on the Major Complications of Chronic Purulent Otitis," Irving W. Voorhees, M. D., New York.

"Mastoiditis in the Aged," T. Lawrence Saunders, M. D., New York.

"Measurement of Middle Ear Air Pressure," Edmund Prince Fowler, M. D., New York.

Discussion opened by Isidore Friesner, M. D., New York.

"A Case of Brain Abscess," James E. Gage, M. D., Utica.

"The Ocular Symptoms of Wood Alcohol Poisoning," S. Lewis Ziegler, M. D., Philadelphia, Pa. (by invitation).

"Para-specific Therapy in Severe Ocular Infections," Ben W. Key, M. D., New York.

"Advantages of Evisceration over Enucleation," Walter B. Weidler, M. D., New York.

Wednesday, March 24th, 2.30 P. M.

"The Relation of Hypotension and Hypertension of the Membrana Tympani to Deafness and Tinnitus," Harold Hays, M. D., New York.

"Demonstration of the Uses of the Tonsilloscope," Thomas R. French, M. D., and Albert J. Keenan, M. D., Brooklyn.

"Intra-nasal Drainage of the Frontal Sinus through the Natural Openings," Max Unger, M. D., New York.

Discussion opened by Emil Mayer, M. D., New York.

"Cosmetic Surgery of the Nose in Civil Practice," Seymour Oppenheimer, M. D., New York.

Discussion opened by William W. Carter, M. D., New York.

"Chronic Tonsillar Infections," T. Avery Rogers, M. D., Plattsburg.

Thursday, March 25th, 9.30 A. M.

"Endoscopy as a Diagnostic Aid in Diseases of the Upper Air Passages and Esophagus," Charles J. Imperatori, M. D., New York.

Discussion by Sidney Yankauer, M. D., New York.
"Bronchoscopy and Esophagoscopy," John D. Kernan, M. D., New York.

"Sarcoma of the Nose and Naso-pharynx," Thomas H. Farrell, M. D., Utica.

Discussion by Clement F. Theisen, M. D., Albany.
"Treatment of Intra-nasal Suppuration, with Demonstration of Operations on the Cadaver," E. Ross Faulkner, M. D., New York.

**SECTION ON NEUROLOGY AND
PSYCHIATRY.**

Chairman, Marcus B. Heyman, M. D., Ward's Island.
Secretary, Michael Osnato, M. D., New York.

Tuesday, March 23d, 2.30 P. M.

"Spinal Concussion with a Report of a Case," Louis Casamajor, M. D., New York.

Discussion by David E. Hoag, M. D., Norman Sharpe, M. D., New York.

"Experiences in Spinal Surgery," Charles A. Elsberg, M. D., New York.

Discussion by Byron P. Stookey, M. D., New York (by invitation), Norman Sharpe, M. D., New York.

"The Surgical and Neurological Aspects of Peripheral Nerve Injuries" (lantern slides), Byron P. Stookey, M. D., New York (by invitation).

Discussion by Charles A. Elsberg, M. D., Walter Kraus, M. D., Norman Sharpe, M. D., New York.

Wednesday, March 24th, 2.30 P. M.

"Further Observations on the Relation of Focal Infection and the Psychoses" (lantern slides), Henry A. Cotton, M. D., Trenton, N. J. (by invitation).

Discussion by Jerome M. Lynch, M. D., John W. Draper, M. D., New York, George H. Kirby, M. D., New York (by invitation).

"What the Psychiatrist can Contribute to the Study of the Patient," C. Macfie Campbell, M. D., Baltimore, Md. (by invitation).

Discussion by Bernard Glueck, M. D., New York (by invitation).

"A State Program for the Feeble Minded," Walter E. Fernald, M. D., Waverly, Mass. (by invitation).

Discussion by Thomas W. Salmon, M. D., New York.

"The Place of Psychiatry in Preventive Medicine," Thomas W. Salmon, M. D., New York.
Discussion by George H. Kirby, M. D., New York (by invitation).

Thursday, March 25, 2.30 P. M.

"Infective Neuronitis," Foster Kennedy, M. D., New York.

Discussion by Louis Casamajor, M. D., Walter Kraus, M. D., New York.

"The Indications and Contra Indications for Intra-spinal Therapy in Neurosyphilis," John A. Fordyce, M. D., New York.

Discussion by Frederick Tilney, M. D., Leon H. Cornwall, M. D., New York.

"Vascular Diseases in Their Relation to Diseases of the Central Nervous System," Edward D. Fisher, M. D., New York.

Discussion by Edward Livingston Hunt, M. D., New York.

SECTION ON PEDIATRICS.

Chairman, A. Clifford Mercer, M. D., Syracuse.
Secretary, Robert Sloan, M. D., Utica.

Tuesday, March 23d, 2.30 P. M.

"Social Pediatrics," Henry L. K. Shaw, M. D., Albany.

"The Results of the Presence of Adenoids in Infancy," Rowland G. Freeman, M. D., New York.

"Colic," T. Wood Clarke, M. D., Utica.

"The Mortality Factors in Lobar Pneumonia in Children," LeGrand Kerr, M. D., Brooklyn.

"Sugar," Frank vander Bogert, M. D., Schenectady.

Wednesday, March 24th, 9.30 A. M.**Joint Meeting with the Section on Medicine.****Symposium on Vitamines.**

"The Water-Soluble Vitamine," Thomas B. Osborne, Ph. D., New Haven (by invitation).

"The Fat-Soluble Vitamine," Lafayette B. Mendel, Ph. D., New Haven (by invitation).

"The Role of Vitamines in Childhood," Alfred F. Hess, M. D., New York.

Discussion, Edward V. McCollom, M. D., Baltimore (by invitation); L. Emmett Holt, M. D., New York; Graham Lusk, Ph.D., New York (by invitation); John Howland, M. D., Baltimore, Md. (by invitation).

Wednesday, March 24th, 2.30 P. M.**Pediatric Clinics in New York Hospitals.****Thursday, March 25th, 9.30 A. M.****Joint Session with Section on Public Health.**

"Delayed Emptying of the Stomach in Infants and Young Children," Charles G. Kerley, M. D., New York.

"The Course of the Bacillus from Sputum to the Child," Allen K. Krause, M. D., Baltimore (by invitation).

Discussion by Lawrason Brown, M. D., Saranac Lake.

"The Rollier Treatment of Tuberculosis," illustrated with lantern slides and movie film, Clarence L. Hyde, M. D., Perrysburg.

Discussion opened by Hermann M. Biggs, M. D., Commissioner of Health, New York State.

"Child Care as Reflected by Arts and Crafts," illustrated with lantern slides, John Foote, M. D., Washington, D. C. (by invitation).

Discussion by Henry L. K. Shaw, M. D., Albany.

Thursday, March 25th, 2.30 P. M.**Pediatric Clinics in New York Hospitals.****SECTION ON PUBLIC HEALTH, HYGIENE
AND SANITATION.**

Chairman, Paul B. Brooks, M. D., Albany.

Secretary, Arthur D. Jaques, M. D., Lynbrook.

Tuesday, March 23d, 2.30 P. M.**Joint Session with Section on Medicine.**

"Early Recognition of Tuberculosis," (illustrated), Harry A. Bray, M. D., Ray Brook.

"Industrial Hygiene," Anthony J. Lanza, M. D., United States Public Health Service, Pittsburgh, Pa. (by invitation).

"Preventable Diseases of Adult Life," Eugene L. Fisk, M. D., New York.

"Diphtheria," William H. Park, M. D., New York.

"Scarlet Fever," Edwin H. Place, M. D., Boston, Mass., Supt. South Department, Boston City Hospital (by invitation).

Discussion, W. H. Baldwin (by invitation); Warfield T. Longcope, M. D., New York; Lewis Connors, M. D., New York.

Wednesday, March 24th, 9.30 A. M.**Special Program for Health Officers.**

"The New Public Health from the Standpoint of the Health Officer," John E. Safford, M. D., Stamford.

"Securing Moral and Material Support for Local Health Work," Helen L. Palliser, M. D., Poughkeepsie (by invitation).

"Public Health Work as a Vocation; Its Opportunities and Limitations," Isaac W. Brewer, M. D., Watertown.

"Practical Problems of the Health Officer," Frederick G. Metzger, M. D., Carthage.

Wednesday, March 24th, 2.30 P. M.

Special Program for Laboratory Workers.

"The Results of the Use of Antitoxin in the Prevention of Diphtheria," William H. Park, M. D., New York.

"Identification of B. Diphtheriae and Diphtheria-like Organisms," William E. Youland, M. D., Albany (by invitation).

"Confirmatory Tests on Throat Cultures reported as Unsatisfactory owing to the Presence of Organisms Morphologically Atypical," Miss F. C. Stewart, Albany (by invitation).

"Standards in Laboratory Efficiency," Frederic E. Sondern, M. D., New York.

Title to be announced, Joseph S. Lawrence, M. D., Albany (by invitation).

Thursday, March 25th, 9.30 A. M.

Joint Session with Section on Pediatrics.

"Delayed Emptying of the Stomach in Infants and Young Children," Charles G. Kerley, M. D., New York.

"The Course of the Bacillus from Sputum to the Child," Allen K. Krause, M. D., Baltimore, Md. (by invitation).

Discussion opened by Lawrason Brown, M. D., Saranac Lake.

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"Child Care as Reflected by Arts and Crafts," illustrated with lantern slides, John Foote, M. D., Washington, D. C. (by invitation).

Discussion opened by Henry L. K. Shaw, M. D., Albany.

HOTELS

Astor: Times Square and Forty-fourth Street—Room with bath, one person, \$4.00 to \$8.00; two persons, 7.00 to \$11.00.

Belmont: Forty-second Street and Park Avenue—Single room with bath, \$5.00 to \$10.00; without bath, \$3.50 to \$4.50; double room with bath, \$7.00 to \$14.00; without bath, \$6.00.

Biltmore: Madison Avenue and Forty-third Street—Single room with bath, \$6.00 to \$8.00; double room with bath, \$10.00 to \$15.00.

Commodore: Forty-second St. and Lexington Ave.—Room with bath, one person, \$3.50 to \$6.00; two persons, \$5.00 to \$10.00.

Great Northern: 118 West Fifty-seventh Street—Single room with bath, \$4.00 to \$4.50; double room with bath, \$5.50 and \$6.00.

Knickerbocker: Forty-second Street and Broadway—Single room and bath, \$4.50 and \$5.00; without bath, \$3.50; double room with bath, \$7.50 to \$10.00; without bath, \$5.00.

Longacre: Forty-seventh Street and Broadway—Single room and bath, \$2.00 and up; double room and bath, \$4.00 and up.

McAlpin: Broadway and Thirty-fourth Street—Single room without bath, \$3.00 and up; with bath, \$4.00 and up; double room without bath, \$5.00 and up; with bath \$6.00 to \$10.00.

Manhattan: Madison Avenue and Forty-second Street—Single room without bath, \$3.50 and up; with bath, \$4.50 and up; double room without bath, \$6.00 and up; with bath, \$7.00 and up.

Murray Hill: Park Avenue and Fortieth Street—Room without bath, one person, \$2.50 to \$5.00; two persons, \$3.50 to \$6.00; with bath, one person, \$3.50 to \$8.00; two persons, \$4.50 to \$8.00. Room with two beds without bath, \$5.00 to \$7.00; with bath, \$6.00 to \$10.00.

Netherland: Fifth Avenue and Fifty-ninth Street—Room without bath, \$2.50 and up; with bath, \$5.00 and up.

Normandie: Broadway and Thirty-eighth Street—Room, \$2.00 and up.

Pennsylvania: Seventh Avenue & Thirty-third Street—Single room with bath, \$3.50 to \$10.00; double room with bath, \$5.00 to \$10.00.

Plaza: Fifth Avenue and Fifty-eighth Street—Single room with bath, \$5.00 and \$6.00; double room with bath, \$7.00 to \$10.00.

Prince George: Fifth Avenue & Twenty-eighth Street—Room with bath, one person, \$2.50 to \$4.00; two persons, \$6.00.

Savoy: Fifth Avenue and Fifty-eighth Street—Single room with bath, \$4.50 and up; double room with bath, \$6.00 and up.

Seville: Fifth Avenue and Twenty-ninth Street—Single room without bath, \$2.50 to \$3.50; with bath, \$3.00 to \$6.00; double room without bath, \$3.50 to \$5.00; with bath, \$4.00 to \$7.00.

Vanderbilt: Thirty-fourth Street and Park Avenue—Single room with bath, \$4.00 to \$8.00; double room with bath, \$10.00 to \$12.00.

Waldorf-Astoria: Fifth Ave. and Thirty-fourth St.—Single room, without bath, \$4.00 and up; with bath, \$6.00 and up; double room without bath, \$6.00; with bath, \$8.00 and up.

Woodstock: Forty-third Street near Broadway—Room without bath, one person, \$2.00 and up; with bath, \$3.50 and up; room without bath, two persons, \$3.50 and up; with bath, \$4.00 and up.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS WHICH WILL BE PRESENTED FOR ACTION AT THE NEXT ANNUAL MEETING OF THE HOUSE OF DELEGATES.

Amend the Constitution, Article III, Section 1, by adding: "The House of Delegates shall annually elect a Speaker and a Vice-Speaker, these officers to serve for one year, or until their successors are elected and installed. These officers must be Fellows, and must have been Fellows of the American Medical Association for at least the two years immediately preceding their election to this office. They need not, however, be members of the House of Delegates, but they shall possess all powers of the presiding officer of that parliamentary body. These elections shall follow the election of the Treasurer of the Association."

All sections of the Constitution and By-Laws inconsistent with this amendment shall be modified to conform to this section.

Amend the Constitution, Article IV, by striking out the words "each county society shall be entitled to elect to the House of Delegates as many delegates as there shall be State Assembly districts in that county at the time of the election, except that each county society shall be entitled to elect at least one delegate, and except that whenever at the time of election the membership of a county society shall include members from an adjoining county or counties in which there shall be no county society in affiliation with this Society, such county society shall be entitled to elect, from among such memoirs, as many additional delegates as there are assembly districts in the county or counties so represented in its membership."

And inserting the words: "The delegates shall be apportioned among the constituent societies in proportion to their actual active membership, except that each constituent society shall be entitled to elect at least one delegate. The House of Delegates may from time to time fix the ratio of apportionment."

Amend the By-Laws, Chapter II. "No person not a delegate, shall be allowed the privileges of the floor in the House of Delegates save on an affirmative vote of the House."

County Societies

BRONX COUNTY MEDICAL SOCIETY.

REGULAR MEETING, NEW YORK CITY.
WEDNESDAY, JANUARY 21, 1920.

After the installation of the officers for 1920, the incoming President, Dr. Philip Eichler, presented an outline of the plans of the Society for the present year.

The following letter was sent in reply to a letter from the Labor Sanitation Conference:

"In view of the fact that the Medical Society of the State of New York and the Bronx County Medical Society have already gone on record as unalterably opposed to Compulsory Health Insurance, the Comitia Minora deems it unnecessary to hold a conference on this subject."

Scientific Program.

Report of Cases:

Three Cases of Dermatitis Herpetiformis, Samuel Feldman, M.D.

A Case of Perilabyrinthitis, Michael Rosenbluth, M.D.

Two Cases of Hereditary Syphilis, William L. Rost, M.D.

Eight Cases of Death from Bacillus Botulinus, Louis J. Ferrara, M.D.

Standardization in Fracture Treatment, John J. Moorhead, M.D.

MEDICAL SOCIETY OF THE COUNTY OF CAYUGA.

ANNUAL MEETING, AUBURN, N. Y.

THURSDAY, DECEMBER 4, 1919.

The Annual Meeting and banquet of the Cayuga County Medical Society was held in the parlors of the Woman's Union. About forty members and guests were in attendance. The following officers were unanimously elected for year 1920: President, Howard I. Davenport, M.D., Auburn; Vice-President, Samuel W. Day, M.D., Auburn; Secretary, Lillian A. Treat, M.D., Auburn; Treasurer, F. A. Lewis, M.D., Auburn; Censors, Charles L. Lang, M.D., Chairman; Cato, Emmitt G. Fish, M.D., Union Springs, Lawrence B. Sisson, M.D., Auburn, Raymond F. Johnson, M.D., Auburn; Delegate to the State Society, M. P. Conway, M.D., Auburn; Alternates, Ledra Heazlit, M.D., Auburn, Sedgwick E. Austin, M.D., Auburn, Raymond C. Almy, M.D., Auburn.

A delicious dinner was served by Miss MacPherson of the Woman's Union Cafeteria.

Dr. H. E. Anthony, President of the Society, presided and read a most interesting paper on "Americanism." Dr. Frederick W. Sears, State Sanitary Supervisor, was a guest of the Society and gave a brief talk. Dr. John F. Humphrey, of Saratoga Springs, gave an interesting talk illustrated by lantern slides on the "Saratoga cure and its possibilities."

DUTCHESS-PUTNAM MEDICAL SOCIETY.

ANNUAL MEETING, Poughkeepsie, N. Y.

WEDNESDAY, JANUARY 14, 1920.

In the absence of the President, the meeting was called to order by Dr. W. G. Ryon, at 4:00 P. M., in the Hudson River State Hospital. Present: Drs. Ryon, LeRoy, Cavanaugh, Boyce, Marks, Card, Borst, Henderson, Thompson, Merriman, Sadlier, Cotter, Thomson, Lown, Lipes, Harrington, Jameison, Wood, Andrews, Sobel, Kimball, Todd, Sanderson, Dennes, Barth, Trenkle, Tighe, Green, Gribbon, Benson, Dingman, Conger, J. E. McCambridge, C. E. Lane.

The minutes of the previous meeting were read and accepted.

The Comitia Minora report was read and adopted as read.

A meeting of the Comitia Minora was held at the Library Rooms, January 7, 1920, at 4:00 P. M., with the following present: Drs. Wilson, Andrews, Sobel, Marks, Peckham, Sadlier, Card and Carpenter.

Dr. Sadlier introduced the following resolution: It is recommended that the fee bill of the Dutchess-Putnam Medical Society of January 13, 1897, be abolished. Seconded by Dr. Andrews and carried.

It was ordered that all delinquents for the year 1919, who were in the military service at the time that their bills were payable, have their State assessment paid by the Society in accordance with the resolution adopted January 8, 1919.

The reports of the Secretary and Treasurer were read.

The following officers were nominated and unanimously elected for 1920.

President, Irving D. LeRoy, M.D., Pleasant Valley; Vice-President, Nelson Borst, M.D., Poughkeepsie; Secretary, Howard P. Carpenter, M.D., Poughkeepsie; Associate Secretary, Aaron Sobel, M.D., Poughkeepsie; Treasurer, Lewis H. Marks, M.D., Poughkeepsie; Censors, Alva L. Peckham, M.D., Poughkeepsie; Coryell Clark, M.D., Cold Spring; Marcus M. Lown, M.D., Rhinebeck; Delegate to the State Society, J. E. Sadlier, M.D., Poughkeepsie; Alternate to the State Society, Marcus M. Lown, M.D., Rhinebeck; Counsel, G. V. L. Spratt.

The following new members were elected: W. J. Thompson, Clarence W. Barth, Charlotte B. West was admitted by transfer.

The following motion was made:

Resolved, that Chapter X, Section 2 of the By-Laws be amended to read as follows: Each member shall pay annually the sum of [\$3.00] which shall be due on the first day of January.

The matter in brackets new.

Moved that an assessment of \$1.00 be levied for the year 1920.

Moved by Dr. Harrington that the Dutchess-Putnam Medical Society go on record as favoring the bill to amend the Public Health Law to standardize the practice of nursing. Seconded by Dr. Marks and carried.

Moved that the Dutchess-Putnam Medical Society go on record as being opposed to the Health Insurance Legislation of any kind and that copies of this resolution be sent to our representatives in Albany and to Mr. Donohue. Carried.

SCIENTIFIC PROGRAM.

"The Infected Mouth".....A. B. Henderson, D.D.S.
"The League of the Medical and Allied Professions,"
J. E. Sadlier, M.D.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

MODERN SURGERY: GENERAL AND OPERATIVE. By J. CHALMERS D'ARCY, M.D., and SAMUEL D. GROSS, Professor of Surgery, Jefferson Medical College, Philadelphia, Pa. Eighth Edition, Revised, Enlarged and Reset. Octavo of 1,697 pages, with 1,177 illustrations, some of them in colors. Philadelphia and London. W. B. Saunders Company, 1919. Cloth, \$8.00 net.

AN INTRODUCTION TO GENERAL PHYSIOLOGY WITH PRACTICAL EXERCISES. By W. M. BAYLISS, M.A., D.Sc., F.R.S. Professor of General Physiology in University College, London. Published by Messrs. Longmans, Green & Co., New York. Price \$2.50 net.

THE WOMAN OF FORTY. By DR. E. B. LOWRY, author of "Herself," "Confidences," etc. Published by Forbes & Company, Chicago. Price, \$1.25.

DISEASES OF NUTRITION AND INFANT FEEDING. By JOHN LOVETT MORSE, A.M., M.D., and FRITZ B. TALBOT, A.B., M.D. Second edition revised. Published by the Macmillan Company, New York.

FOOD FOR THE SICK AND THE WELL, How to Select It and How to Cook It. By MARGARET P. THOMPSON, Registered Nurse. Cloth, ix + 82 pages. Price, \$1.00. Yonkers-on-Hudson, New York: World Book Company.

MORTALITY STATISTICS, 1917. Eighteenth Annual Report. Department of Commerce. Bureau of the Census. Washington, Government Printing Office, 1919. 4to.

ANNUAL REPORT OF THE SURGEON GENERAL, U. S. Navy, Chief of the Bureau of Medicine and Surgery to the Secretary of the Navy for the fiscal year 1919. Washington, Government Printing Office. 1919. 8vo.

Book Reviews

MILK. BY PAUL G. HEINEMAN, Ph.D., Director of the Laboratories of the United States Standard Serum Company, Woodworth, Wis., Octavo of 684 pages, with 237 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$6.00 net.

The style of this work is so easy and interesting that one at all interested in the subject will read every one of the 684 pages. There is a bibliography at the end of each chapter sufficiently complete to help and guide one extensively in research work and it shows thorough and up-to-date reading and preparation by the author. It can well be called a complete work on milk, for it discusses the subject at least to some extent from practically every point of view.

We could have wished that the cellular elements in milk might have been more thoroughly discussed as to their source and nature, and value, and whether perhaps they do not contain some special nutritive qualities the same as the butter-fat or the casein, rather than a detritus as exemplified in a separator slime.

Under the methods for determining butter-fats the Majoinnier method, now commercially popular and accurate, is not mentioned. On page 287, it speaks of "clean cans in a clean stable," and probably the word "cows" was meant to be used. There are, however, but very few typographical errors. This picture does not show individual water buckets and mangers which today here in the East are receiving so much study as a means of controlling the spread of tuberculosis through stables.

The immense value of using milk pails, cans, and dairy utensils that have been thoroughly dried after washing and sterilizing, might well have received a little more attention than the mere work in a couple of sentences.

One is much impressed on reading the chapter on "The Kinds of Micro-organisms in Milk" with the confused state of the attempt to classify the bacteria found in milk, and even the undetermined relationship between pathogenic and so-called normal organisms of milk.

It is good to see some fairness coming into the milk literature as a distributor of human infections. Some good evidence is presented showing that but very few of the total number of cases of communicable diseases are due to milk. For instance, Kelly's figures are given, showing "that in only 0.03% of cases was the transmission of diphtheria definitely assigned to infected milk." And then a few pages later one is surprised in hearing the author say "that the transmission of diphtheria through milk is a grave possibility and a considerable number of epidemics have been definitely traced to milk."

In many places there seems to be too much repetition of the text. As an illustration the dangers of washing utensils in polluted water are mentioned no less than three times within a very few pages.

We are pleased to see the full and fair chapter on Certified Milk. The author quotes Freeman in trying to show the slight risk of scurvy and rickets from the

use of pasteurized milk, but there is no mention of Holt's later and extensive studies taking the opposite view.

Naturally a rather strong case for pasteurization is made out, covering most disease bacteria, but covers by omission the work of Rosenau and later studies in Chicago covering too many cases where pasteurization did not kill tubercle bacilli.

Some will take strong exception to the statement that "milking operations are the most prolific source of bacterial pollution," for many feel that too often the farmer makes a good clean milk which is afterwards severely polluted by dirty cans and utensils.

The chapter on "economic aspect of milk production" is especially valuable and interesting, and it seems as surprising as wise to have the chapter on milk in its relation to infant feeding, written by Drs. Abt and Levinson, two pediatricists of Chicago fame. Too often this subject is discussed and settled by non-medical men. But even in this chapter we wonder about the double arguing in almost the same paragraph that only the highest grade of tuberculosis-free milk be used for infant feeding, such as Certified, and then arguing the use of boiled milk in infant feeding. We would question, "What is the use?"

There is no mention of the value of cold dilutents in milk modifications or the necessity of keeping modified milk in ice or ice water from the time of modification until it is fed, if the daily modification is all made at one time.

The book closes with the chapters on butter, cheese, ice-cream and ices, and condensed desiccated milks. The question of dry milks is becoming so important as the means of caring for the immense surplus of milk at certain times of the year, that we will hope to see more discussion of this subject in later works, for it is strongly felt that for economic reasons nothing but the water must be wasted from dairy products.

ATLAS OF OPERATIVE GYNAECOLOGY. By BARTON COOKE HIRST, M.D. Professor of Obstetrics, University of Pennsylvania. 164 Plates, 46 Figures. Published by J. B. Lippincott Co., Philadelphia, 1919.

In these days of fewer masters, and a higher general average of experts, the doings of the former are not like unto the laws of the Medes and Persians; but while we may or may not agree with an author, it is refreshing to read the product of the pen of a master. Hirst's strong, confident personality, reminding us of the late George R. Fowler, shines through this work. As an atlas should be, it is chiefly valuable for the illustrations that are large but not so finely done as those of Crossen's. Neither are the legends so explicit, and occasionally they don't correspond to the text, the latter being so terse, however, that it takes but a moment to compare them.

His text and pictures on equipment, preparation, abdominal wound opening and closure, show that he is, as one would expect, an organizer. His sterilization of the skin before laparotomy is elaborate, and his results don't substantiate his contention that it is better than the more common iodination. His "rational perineorrhaphy" is so different from all other procedures that it is beyond a book review to discuss. He lends the support of a large experience to interposition for the cure of anterior wall trauma and prolapse in the woman who has done with child bearing. Hirst has also modified it by utilizing the fascia more than is commonly done, agreeing with the reviewer's experience, that it makes for a firmer anterior wall.

The plates of trachelorrhaphy are as beautiful as they are in most books and as they less frequently are in the patient. This operation requires more individualizing than any in plastic surgery, and for lack of skill in that line most operators are driven to some form of amputation more frequently than is good for the patient.

Hirst apparently does but one operation for retroversion, the Alexander, modified by opening the abdomen with the Pfannenstiel incision. Before the peritoneum is closed a suspension suture is placed, an illogical procedure.

The methods described for the removal of the appendages are the more usual ones, but do not show as much anatomical consideration as the methods of Norris that he has described in his treatise "Gonorrhea in Women."

The illustrations of supravaginal amputation of the uterus are good and show what is pretty nearly universal technic. When he describes the complete extirpation of the uterus, there is overlooked the important process of repairing the vaginal vault. The description and indorsement of the Wertheim procedure for cancer of the uterus is well worth perusal. There is an unusual operation prettily exhibited under the curious name of "supravaginal extraperitoneal hysterectomy" that might have a very definite though limited field.

Caesarean section and mammary gland surgery are unexpectedly included in this gynaecology, the former showing the methods of both classical and extraperitoneal operations, the latter, to the reviewer being entirely out of place.

A very important section of the book must be condemned. The after-treatment of abdominal section is old fashioned, with the polypharmacy of twenty years ago, the one drug that ought to be the stand-by is never mentioned—morphine.

E. B.

THE NERVOUS HEART: ITS NATURE, CAUSATION, PROGNOSIS AND TREATMENT. By R. M. WILSON, Captain, R.A.M.C. Cardiologist to French Fever Research and JOHN H. CARROLL, Major M.C., U.S.A., Specially Attached Trench Fever Committee, Assistant Visiting Physician, City Hospital. By the Oxford University Press, New York and London, 1919.

In this little work, the authors have viewed the problem of heart disease, especially of the functional type, from a new angle—that of the nervous system. They state that if a profound disturbance of the nervous control of the heart exists, the heart muscle will work at a disadvantage. Taking this statement as a theme, the rest of the book is devoted to its elucidation. They recite that there are two sharp differentiations of physical bodily function—the so-called reaction state and the rest state. The former is the state of mental or muscular activity in which blood is drawn from the great blood lakes or hearts (the skin lake, the lung and mesenteric lakes) and is forced at pressure into muscles and brain. In the reaction state, the skin arterioles are vaso-constricted, as are also the arterioles of the lungs and abdomen; the blood pressure in the great vessels rises; the muscles are engorged with blood and the diaphragm is held in inhibition. In the rest state which follows reaction, the exactly opposite condition is seen. The hearts or lakes are open, the blood fills them at easy pressure, and the muscles are limp and flabby.

When the fact is grasped that the whole mechanism of reaction is directed to filling the muscles with blood and the brain with blood, it becomes quite evident that the efficiency of any given effort, whether of the muscles or of the brain, depends upon the efficiency with which blood is drawn into these structures. The efficient performance of effort is a function of the sympathetic nervous system. The blood lakes are shut by the true or adrenalin sympathetic and they are opened by the vagus depressor system, therefore any failure or imbalance in the function of these two sets of nerves is capable of producing marked cardiovascular effects.

The demonstration of these effects is carried out at length and makes very interesting reading.

THE FUTURE OF MEDICINE. By SIR JAMES MACKENZIE, F.R.S., M.D., F.R.C.P., LL.D., Ab., and Ed., F.R.C.P.L. (Hon.) Consulting Physician to the London Hospital. Published by the Oxford University Press, New York, 1919.

When Mackenzie writes, the medical world reads! The burden of this last book, a small octavo of 238 pages, is a forecast of the next advance in medicine—namely, the establishment of earlier diagnosis by recognition of the first symptoms of disease. Carefully the author considers the interrelations of early symptomatology and the beginnings of disease, and emphasizes his belief that for the identification and definition of this symptomatology we must await the more thorough and scholarly bedside study of the patient by the general practitioner, who is uniformly the first medical man to observe him. physical signs are elicited or laboratory findings reveal demonstrable pathology, it is no longer correct to speak of "early diagnosis." The author is insistent that when tissue changes are thus manifest, the disease is not in its incipency, and the diagnosis must be established much earlier if we are to hope for the cure of such disease by improving hygiene or modifying diet, habits or work.

Others than Mackenzie have spoken of the "language of disease," by which recognition and diagnosis are fixed, but the theme will stand varied presentation, and Mackenzie urges the study of the very beginnings of disease, the as yet little understood mouthings of the infant, as it were.

In this volume, the particular charm for the internist lies in the chapters dealing with the author's personal experiences, for here he lays bare the stories of his investigation of pain, the study of irregular heart and the recognition of auricular fibrillation. This veritable glimpse behind the scenes gives an insight into the workings of an orderly brain, and one is privileged, indeed, to be so personally made a party to the investigation. It is as though we stood at the great man's elbow as he solved his problems, so frank is he in his account of his trials, disappointments and successes. If he at times stresses the importance of his own work, he is understood, at least.

The reviewer lays this book aside regretfully, for it is pregnant with thoughts dealing with the future assessment of the value of symptoms.

FRANK BETHEL CROSS.

THE SURGICAL CLINICS OF CHICAGO. Volume III, Number 5 (October, 1919). Octavo of 258 pages, 91 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Published Bi-Monthly. Price, per year: Paper, \$10.00; Cloth, \$14.00.

These serial surgical publications continue to be of live teaching value. The October issue contains case records and discussions from the Surgical Clinics held by Drs. Eisendrath, Bevan, Speed, Ochsner, Majors Potts and Montgomery, Drs. Oliver, Gatewood, Moorhead, McWhorter, Watkins, Kretschmer, Herbst, Culbertson, Cornell and Davis.

To subscribe to these Clinics means close touch with the best that surgical Chicago affords.

Deaths

FRED M. BOWLES, M.D., New York City, died January 28, 1920.

LEWIS WHITE CALLAN, M.D., New York City, died January 21, 1920.

FRANK LAWRENCE COCHRANE, M.D., Brooklyn, died January, 1920.

PETER C. GUINAN, M.D., Rochester, died January 4, 1920.

JOHN A. KANE, M.D., Brooklyn, died January 23, 1920.

ROBERT KEARNS, M.D., Middletown, died January 21, 1920.

NEW YORK STATE JOURNAL OF MEDICINE

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EDITORIAL DEPARTMENT

PROHIBITION—DEPRIVATION.

WE believe that there is no more sincere advocate of prohibiting the use of alcohol as a beverage than the medical profession. We believe that the use of alcohol has been a greater scourge to humanity than all the plagues combined. We believe that it has brought more vice, sorrow and poverty into the world than any other cause. We believe in the closing of every saloon and public bar, that wine cellars of clubs should be emptied and *that in every household* there should be as a *medicinal remedy a bottle of pure whiskey*. We would not have advocated whiskey as a household possession prior to the enactment of the prohibition law now in force, because at that time alcoholic liquors were easily obtainable in quantity and cheaply and thus temptation to use them for non-medicinal purposes would exist.

We will enter into no disquisition on the physiological or therapeutic effects of alcohol. We all know that it helps the heart to pulsate until metabolic changes in the animal economy occur which restore vital functions.

The fanatical mind of the prohibitionist sees in whiskey the maniacal alcoholic with blood dripping from his murderous knife—he does not see the sick-room where the patient hovering between life and death is watched by the physician or nurse in readiness to administer alone or in combination alcohol to sustain the flagging heart until the crisis is past.

Aye! the prohibitionist will exclaim, there are other and better heart stimulants than alcohol.

Let us see what other heart stimulants we possess—many it is true—but is there any one so safe in the hands of the inexperienced?

Digitalis, ammonia, caffeine, ether, nux vomica, strophanthus, nitroglycerine, opium, arsenic, and others, all valuable, but all possessing poisonous properties preventing their use except under the supervision of a physician or a trained nurse.

The laity does not know them even by name much less their physiological action, in what emergencies they should be used, or their dosage. Whereas, the world over knows the properties of whiskey as a heart stimulant and anodyne as well as the medicinal dose for infant, child and adult.

In prolonged exhaustive illness, its doses can be nicely regulated by any member of a family caring for the sick one. Take any one of the other heart stimulants mentioned and there will at once be recognized the care demanded in their exhibition—digitalis, one of the most valuable for instance, its effects are uncertain and a knowledge of the character of the pulse is requisite and its actions thereupon. It cannot be ordered to be given at regular intervals but determined by its action upon the heart. This applies not only to digitalis but to the others mentioned, and their use by a layman is fraught with danger.

The foregoing are a few of the reasons why we maintain that whiskey (37 per cent. alcohol) in a small amount should be kept as a remedial agent in every home in case of emergencies.

Under the present laws the public is deprived of the privilege of procuring this small amount except through a physician's prescription, and even fortified with this it is now difficult to obtain. Drug stores with few exceptions refuse to dispense it as they desire to dissociate themselves from the sale of liquors in any form. A pharmacist recently said to the writer that a majority of the honest pharmacists had borne for a long time the odium of others who made a practice of selling whiskey by the glass behind the prescription desk to favored customers. But drug stores are the logical depositories for the dispensing of alcohol as a medicine by reason of their wide distribution in every section of the city. It seems to us that if the Government would permit the owners of whiskey now in storage to put it up in eight-ounce sealed containers and sell it to druggists at a reasonable price, who would in turn sell at a reasonable profit and the druggist be designated by the Government as its agents, relieving them of the licenses now imposed, the druggists could with self-respect serve the community.

Anyway, it is the Government's duty to establish depositories for the sale of liquors for medicinal purposes, and to avoid hardships they should be established in prescribed districts throughout the city, so that it would be possible for the public to obtain the amount necessary without entailing the expense of a doctor's pre-

scription, for which the doctors would be thankful.

The present prohibition enactment should be amended with all the good points preserved and its bad ones rectified, chief of which is the practical deprivation of a food and medicine to the sick.

A PRAISEWORTHY UNDERTAKING.

A NUMBER of well-known physicians* of New York have been granted a Charter to establish a Physicians' Home having for its object the founding of a home in which doctors who have become incapacitated for work through illness or old age might find an asylum, in which pleasant surroundings would mitigate the mental or physical sufferings incident to the unfortunate position in which they find themselves after giving the best they had for the welfare of others.

It is only to a few members of our profession upon whom Dame Fortune smiles in the evening of their labor. We begin our careers with youth, health and ambition, and see before us obstacles and hardships to surmount, but who is he who has not felt himself girded with strength to crown all with a glorious ending. Swiftly speed the years; many discouraged fall by the wayside and seek easier and more profitable employment to gain a livelihood; others eke out an existence harassed by financial difficulties but who through economy manage to make ends meet. Those who have met with success find that this success to be continuous entails expenditures in so many different forms that no surplus remains to constitute a fund which may be drawn upon when the dust from the pathway of life whitens the hair and age makes way for youth.

We sometimes think that doctors as a class are improvident in the sense that they do not look far enough into the future, they seem to live only in the present without taking into consideration that with advanced middle life there commences a gradual diminution of earning power so that

* President, Dr. Robert T. Morris, 616 Madison Avenue; Secretary, Dr. Silas F. Hallock, 36 East 65th Street.

he who is unable to save during this period of his career is truly in an unenviable position.

To those who have been successful in obtaining comparative wealth should fall to an extent the responsibility of assisting those of their brethren in dire need. It should be done voluntarily and in a manner to make the recipient feel that he was being rewarded as a soldier who had fought bravely though beaten.

If every doctor in New York able to afford it would become a contributor to the support of the Home to the extent of ten dollars annually, with the promises already secured from citizens charitably disposed, the Home could be successfully maintained and the contributors know that they were doing something to aid many a weary brother to find rest.

THE COMING ANNUAL MEETING OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

THE Annual Meeting of the State Medical Society is always looked forward to with a feeling of pleasure by members who are progressive and who hold that the financial loss incurred in absenting themselves for three or four days from their practice is amply compensated for by the accrument of knowledge, pleasing relaxation from the daily routine of practice and the meeting with friends from every section of the State.

You will all willingly admit that we have passed through a strenuous period, with the Flu raging, the weather giving a variety of performance whereat Messrs. Boreas, Jupiter, Neptune and that cold-blooded individual, Jack Frost, vied with each other in antics unparalleled, evidently for their own amusement, at our impotent expressions of disgust. Let us hope that before the 23d of March the coryphées in dress diaphanous will drive them from the stage with Thompson's "Ode to Spring"—"Come, gentle Spring, ethereal mildness, come," etc. What we were about to say ere our pen went off on a tangent was that during this strenuous period we were apt to leave our JOURNALS unopened. If this applies to you, will you not open the NEW YORK STATE JOURNAL

OF MEDICINE, February number, page 56, where you will find the scientific program and other information concerning the annual meeting. If at all carefully scanned the greatest mental dyspeptic will be able to find food of the most nutritious and alleviating character prepared by Dr. Parker Syms and his Committee on Scientific Work.

The regular Annual Meeting of the House of Delegates will be held on the afternoon of March 22d, 1920, in Hosack Hall, New York Academy of Medicine. Here the medical navigators will shape the course of our ship for the ensuing year—financial rocks even now show their threatening heads above the surface.

On Tuesday, March 23rd, at 8:30 P. M., at the Hotel Pennsylvania, the Society will be called to order by the President, followed immediately by an address of welcome by the Chairman of the Committee on Arrangements, Charles H. Peck, M. D.

After the reading of the minutes of the 113th Annual Meeting by the Secretary, Dr. Edward Livingston Hunt, Dr. Grant C. Madill will deliver the Presidential Address.

Following the presidential address, the annual oration will be delivered by Dr. John H. Finley, Commissioner of Education.

The intellectual repast will be followed by a Reception and Dance in the ballroom of the Hotel where, relieved from mental concentration, the healthful jollities and jovialities may be indulged in without loss of professional dignity.

OUR DINNER

Bear in mind the Dinner to be held at the Waldorf-Astoria on the evening of March 24th at 7:30 o'clock. It is to be just a big family affair, where shop will be tabooed but time given for all other subjects, even the nasty weather.

We cannot all be good talkers, but all can be good listeners, particularly so when Mr. Ernest Thompson Seton, Rev. Karl Reiland and Dr. George D. Stewart will add to the pleasure of the evening by entertaining us with witching wit and worldly wisdom.

Original Articles.**CHRONIC APPENDICITIS—A STUDY
OF POST-OPERATIVE END
• RESULTS.***By **E. MacDONALD STANTON, M.D., F.A.C.S.,**
SCHENECTADY, N. Y.

NO disease is more ideally suited for surgical treatment than is chronic appendicitis. The operative dangers are practically nil and if the diagnosis be correct the post-operative cure is absolute. A correct diagnosis is therefore the all essential factor for success, and it is because I see a very considerable number of patients who have been operated under an incorrect diagnosis of chronic appendicitis by surgeons of unquestioned ability, and because among the physicians who refer cases to me for operation I find a very hazy conception of the symptomatology of this disease, that I have decided to bring this subject before you to-day.

What is chronic appendicitis? All of us have used the term freely for many years but the condition is by no means as easy to define as its rather alluring name would seem to indicate. The name implies that we are dealing with a definite pathological entity capable of fairly constant recognition by the surgical pathologist. That this is not the case, however, can be easily proven from the records of any hospital with a well-equipped pathological laboratory and a competent pathologist. The finer microscopical changes supposed to be indicative of chronic inflammation do not bear any constant relationship to the clinical picture presented by the patients whose appendices have been sent to the laboratory. For purposes of studying the symptomatology of this disease I believe that our only absolutely reliable test is the end result record. The patient promptly and permanently relieved following a simple appendectomy did have appendicitis. The patient who is not cured following the operation in all probability did not have an appendix which was responsible for the symptoms.

For the purposes of this study I have analyzed the clinical histories of 110 patients operated by me under a pre-operative diagnosis of chronic appendicitis and definitely cured, as proven by end result records extending over periods of from one to ten years following their operations. Considerable confirmatory data has been obtained from the histories of an approximately equal number of patients operated for acute appendicitis, but who after operation found themselves cured of a long-standing tendency to attacks of so called indigestion. A third group of histories studied has been composed of cases not demonstrably benefited by appendectomies performed by myself and by other surgeons.

The point which I want to emphasize particularly in this paper is the fact that practically without exception the cured cases in my series have presented a definite and constant group of symptoms. The symptoms which, according to my experience have been characteristic of chronic appendicitis have been equally conspicuous by their absence from the histories of the uncured cases. Also I wish to emphasize the relationship of the characteristic symptoms of so-called chronic appendicitis to the well-known symptoms of the acute attack.

The attack of acute appendicitis is accompanied by a group of symptoms which are so constant in their essential features as to make an almost uniform clinical picture. The intensity of the several symptoms may vary markedly in different individuals, but the essential features are always present and easily recognizable provided only that the history is accurately taken. In practically all acute cases the attack begins with cramp-like pains which are for the most part referred to the epigastrium or mid-abdominal region. These initial cramp-like pains are almost uniformly accompanied by nausea and in the great majority of cases by vomiting. Abdominal pains of this type with the accompanying nausea or vomiting are characteristic of all acute obstructions located at no matter what point along the gastro-intestinal canal. They are present in the first hours of an acutely strangled hernia, in intussusception, in obstructions due to foreign bodies, tumors, or adhesions, and in acute and also chronic appendicitis.

If the patient suffering from acute appendicitis be operated within six or eight hours of the onset of these pains or before temperature and subjective pain in the region of McBurney's point has developed, the pathology encountered is practically constant in all cases. The appendix is found to be obstructed at some point along its lumen. Distal to the point of obstruction the lumen is distended to limits which are determined by the character of the walls of the individual appendix. As a result of the overdistention the circulation of the appendix is more or less interfered with. The walls are swollen and oedematous, but histological examination of these very early appendices shows that the true inflammation, the result of secondary bacterial invasion which develops with such rapidity, is not present to a noteworthy extent at the very beginning of the painful attack.

I believe, therefore, that we have sufficient evidence to say definitely that the abdominal cramps and nausea which usher in the attack of acute appendicitis are caused by the obstruction of the lumen of the appendix and that they result directly from spasm of the wall of the appendix.

From 6 to 24 hours, as a rule, after the onset of the acute attack fever develops and at about this time the chief subjective pain shifts to the

* Read at the Annual Meeting of the Medical Society of the State of New York, May 7, 1919.

region of the right lower quadrant. The cramp-like pains which ushered in the attack, now usually subside. Gross and histological study of a large number of appendices removed at this stage of the disease and studied with special reference to the clinical symptoms in the corresponding cases has convinced me of the following:

First. The subsidence of the primary cramp-like pains is due to paralysis of the muscular wall of the appendix. Second. The primary overdistention of the wall of the appendix allows of bacterial invasion and is followed, in the acute cases, by diffuse inflammation involving all of the coats of the appendix.

With the onset of the true inflammatory process we have fever and the subjective pain is referred to the region of the appendix. This is in accordance with our knowledge of pains of intestinal origin in general. The pain due to spasm of the appendix wall is like other pains of obstructive origin, referred, as a rule, to the mid-abdominal region and is accompanied by nausea or vomiting. The pain due to true local inflammation is referred to the inflamed part itself, namely, the appendix and the involved area of peritoneum.

I have gone into the symptoms and the correlated pathology of acute appendicitis in some detail because my end result studies have convinced me that the diagnostic symptoms produced by the so-called chronic appendix are very similar in kind and mode of origin to the earlier symptoms so characteristic of the more severe attack which progresses to the inflammatory lesion of acute appendicitis.

SYMPTOMS OF CHRONIC APPENDICITIS.

Pain is the most constant symptom of chronic appendicitis. The primary pain of acute appendicitis is almost always located in the epigastrium or mid-abdomen. Similarly in cured cases of chronic appendicitis, the pain had been almost constantly referred to as epigastric or mid-abdominal rather than right inguinal. On the other hand nearly all the patients not benefited by operation complained of right inguinal pain as one of their chief symptoms.

Graham and Guthrie¹ state that, given attacks of dyspepsia accompanied by epigastric pain with radiation to or about the umbilicus or lower abdomen, we must hold first and clearly to appendicular disturbance, and this statement agrees perfectly with our experience. We may call this pain a pylorospasm, or we may account for it as best suits our fancy, but it is undoubtedly analogous to the early pain of the acute appendix attack, and its presence in real cases of chronic appendicitis is so constant that its absence in the history of a suspected case should lead to a grave doubt as to the accuracy of the diagnosis. Such

attacks of epigastric or mid-abdominal pain or distress were present in 108 out of 110 or 98 per cent. of my cured cases. On the other hand my histories show that when this type of pain is not complained of by the patient in all probability an appendectomy will not cure the patient.

Epigastric or mid-abdominal pain is also a prominent symptom in a number of other abdominal diseases, but a carefully analyzed history will allow of a differentiation in most cases.

In gastric and duodenal ulcer we have a clean-cut regularity in the symptoms not observable in appendicular dyspepsia. In ulcer before secondary complications have intervened, the remissions between attacks are free from symptoms, and during the attack the pain comes on at a regular interval after each meal. Food gives temporary relief and alkalies are similarly effectual. Later, as complications intervene much of this regularity is lost, but the early history is always obtainable and the onset of complications is usually accompanied by evidence of food retention.

In gall bladder disease we have the sudden onset and almost equally sudden relief, with the characteristic radiation of the pain, or, in the absence of real pain we may have the sudden attacks of gaseous pressure relieved by belching, slight vomiting, or regurgitation. The patient as a rule notices no definite relation to food intake, the periods of disability are usually short, and the intervals are, as a rule, relatively free from symptoms.

In chronic constipation the distress or pain is of a diffuse character, with areas of special intensity corresponding to points along the colon. Increase of pain or distress is directly referable to the degree of constipation, and the trouble is temporarily relieved by catharsis.

In enteroptosis the pain varies greatly in individual cases, bears a definite relation to fatigue and the upright position and is associated with the characteristic physical type and neurasthenic tendencies.

In appendix dyspepsia the first pain of an attack may come on without warning or may follow an indiscretion in diet, but during the subsequent period of disability, food intake is regularly associated with an increase of distress or pain. The discomfort is irregular as to time of onset and may appear any time, from a few minutes to an hour or more after eating, and may be manifested only as a peculiar epigastric distress; or attacks of quite severe abdominal pain may be followed by days or weeks in which the patient is afraid to eat because each meal is liable to be followed by a peculiar tenacious distress of such a nature as to convince both the patient and the examining physician that there is something definitely wrong at some point in the intestinal canal.

Nausea.—Next to the pain and epigastric distress, nausea has been the most frequent symptom in our cured cases. One hundred and five

or 95 per cent. of 110 cured cases in my series, report having had nausea with at least some of their painful attacks. As the pain increases in severity, nausea becomes a prominent symptom, and with attacks approaching in intensity the pain of acute appendicitis, nausea and vomiting become the rule. While actual vomiting is limited largely to the more severe painful attacks, nausea seems to be far more common than in gastric ulcer or gall-stones; nausea is the rule during the height of the attacks, and frequently is the most constant and distressing symptom complained of by the patient. Oschner has called attention to the fact that this symptom is especially frequent in cases where the appendix contains a large fecal concretion.

Pain in Right Lower Quadrant.—Ninety-five or 86 per cent. of my cured cases have also complained of subjective pain or tenderness in the right lower quadrant. This pain when occurring in close association with the more diffuse or mid-abdominal pains and especially when also associated with nausea points directly to the appendix as being the organ at fault. On the other hand right inguinal pain not associated with the other above-mentioned symptoms only very rarely indicates chronic appendicitis.

Constipation.—Most writers have spoken of constipation as one of the chief symptoms of chronic appendicitis, but in our cured cases constipation has not been more prevalent than in the ordinary run of office patients, and removal of the appendix has had no constant effect upon this condition. As will be noted later, a large group of uncured patients with pain in the lower right quadrant suffered from chronic constipation, and neither the pain nor the constipation was benefited by removing the appendix. Several patients who sometimes had spells of sudden diarrhoea following soon after the onset of their painful attacks, were cured of the diarrhoea after removal of their appendices, a fact previously noted by Ewald and others.

Gas.—In our earlier records, gas and distress are often used without especial differentiation, but we have come to realize that in chronic appendicitis the distress usually bears no particular relation to gas, and although discomfort subjectively interpreted as being due to gas makes up part of the general picture, it is a far more characteristic feature of the uncured than of the cured patients.

Appetite.—The appetite often fails during the height of the attack, but for the most part our histories of the cured cases record the fact that the appetite is good, but the patient is often afraid to eat because of the subsequent distress.

Taking the 110 cured patients as a group, we are at once struck by the fact that 108 complained of attacks of epigastric or mid-abdominal pain

or distress. Ninety-five stated that they had one or more attacks in which the primary pain and nausea were also accompanied by pain or soreness in the right lower quadrant, a fact which aided materially in the diagnosis; but even in these patients the subjective symptoms directly referable to the region of the appendix constitute but a minor part of the total discomfort. On the other hand, our uncured patients almost without exception complained of pain in the right lower quadrant as their chief symptom.

It is altogether probable that the symptoms of so-called appendiceal indigestion are caused by the same abnormal condition which is the predominating factor at the onset of the acute attack, namely, an obstruction interfering with the free drainage of the appendix, and that as long as the lesion remains a mechanical one the pain or discomfort is referred to the mid-abdominal region. On the other hand, it is a well-known fact that, with the onset of active inflammatory changes in the appendix, we have pain subjectively referred to the region of the appendix. In those who escape the acute inflammatory attacks, the subjective symptoms may be entirely referred to the epigastrium or mid-abdominal region, but in the majority of patients, occasional attacks will probably lead to active inflammatory changes in the appendix and an accompanying pain or soreness in the right lower quadrant.

UNCURED CASES.

The time allotted me for the reading of this paper does not permit of a detailed analysis of the uncured cases. Previous to 1911, when I first reviewed my end results in these cases we had errors in diagnosis amounting to 36 per cent. During the past eight years 86 per cent. of the patients I have operated for chronic appendicitis have been definitely cured by the operation.

The uncured patients have for the most part fallen into two rather sharply defined groups. The larger group is typically represented by the young woman who haunts the surgeon's office complaining of right inguinal pain usually associated with varying degrees of constipation. The type is familiar to all of you. Fatigue or constipation or both are usually given as causes of increased pain. Many of them tell you that they have been repeatedly treated with the ice bag for supposed attacks of acute appendicitis. A carefully taken history fails to reveal the first two of the cardinal symptoms of appendicitis, namely, the cramp-like diffuse or mid-abdominal pain and nausea.

The great majority of these cases present at operation a normal appendix and an enlarged, movable cæcum of the type described by Wilms,² Stierlin³ and others.

I wish to emphasize the fact that in eleven years of operating I have never cured a single one of these cases by appendectomy, nor have I ever learned of a convincing case of cure by another surgeon.

In my experience these cases are readily relieved by proper corseting, abdominal exercises, hygiene and cathartics. Occasionally it may be justifiable to remove the appendix to eliminate doubts and retain control of the patient, but it should not be done with any idea of direct benefit from the appendectomy itself.

The second rather poorly defined group of uncured cases is composed of patients operated in the hope that the appendix might be the cause of various obscure gastro-intestinal symptoms. In the absence of typical appendix symptoms these operations have been uniformly failures. Surgeons and X-ray specialists have talked knowingly about pyloric spasm and its relation to chronic appendicitis, but to date I have failed to find a case which would stand the acid test of the end result investigation. Such authorities as Ewald⁴ and Moynihan⁵ have claimed that almost every conceivable form of dyspepsia might be caused by the appendix. At one time I hoped fervently that they might be right, but to date I have failed to find the cases.

In Conclusion: I wish to say that in my experience chronic appendicitis has proven to be a rather sharply defined disease in which the symptoms may be recognized by the fact that they reproduce in miniature the first symptoms of the acute attack. The disease differs from the acute appendicitis by the fact that the obstruction is incomplete or because it is habitually relieved before the acute inflammatory stage develops. The pathologist's report, based on the microscopical examination of so-called chronic appendices is unreliable. Most symptom producing chronic appendices may be recognized at the operating table by the presence of gross anatomical factors predisposing the appendix to attacks of partial or complete obstruction of the lumen.

Discussion.

DR. GILBERT D. GREGOR, Watertown: This paper of Doctor Stanton's is timely.

The term "Chronic Appendicitis" has become a familiar expression not only in the profession but to the general public due to so much publicity being given to appendix operations by the lay press. Patients will even present themselves at a surgeon's office with a self-made diagnosis of appendicitis and demand an operation. I have even suspected physicians of sending their troublesome patients to the unwary surgeon in the hopes that an appendectomy would be done and then the subsequent unsatisfactory condition of the patient could be attributed to an unsuccessful operation rather than to a fault in the medical treatment.

Dr. Stanton has well said that the pathological findings and the clinical symptoms do not correspond. Why this discrepancy? Is it not due to the fact that the appendix is a vestigial organ and that retrograde involutionary changes are often mistaken for pathological conditions. I am fully in accord with Dr. Stanton when he demands a distinct syndrome before he makes the diagnosis of chronic appendicitis. Pain in the right lower quadrant of the abdomen is of common occurrence; even associated with tenderness this does not constitute chronic appendicitis. For years I have been telling my patients that if there has been no nausea there is no chronic appendicitis.

The young neurotic female with a loose right kidney or relaxed peritoneal supports with constipated bowels and distended right colon are the ones that most frequently lead both physician and surgeon into the error of making a diagnosis of chronic appendicitis and advising operation. On the other hand there is the young male with symptoms of gastric or duodenal ulcers and who is anxious to tell you of his dyspeptic symptoms but fails to mention the pain in the right iliac region, and it is only by close questioning and on examination do we find that the source of his gastric symptoms is in the appendix. But right here is a point that I wish to bring out: the relationship between chronic appendicitis and gastric and duodenal ulcers.

I believe that a chronic appendicitis is not only responsible for an appendiceal type of dyspepsia resembling the symptoms of gastric or duodenal ulcer, but I believe that it is also responsible for the ulcer itself and an ulcer that not infrequently persists after the removal of the appendix. The same as a cervical adenitis depending upon infected tonsils will persist and require separate surgical treatment after the tonsils have been removed. This opinion has been arrived at after considerable experience with suppurative appendicitis developing after stomach operations for clearly demonstrated ulcer at the operation.

One patient, who nearly lost her life from hemorrhage from a duodenal ulcer two months before a gastro-enterostomy was done, had the discourtesy to develop a suppurative appendicitis within a week from her stomach operation. A few similar experiences along this line taught me the advisability of caring for the appendix as well as the ulcer.

This applies particularly to the young adult. Dr. Stanton's theory of the cause of nausea and epigastric pain in chronic appendicitis as being due to partial obstruction to the lumen of the appendix with muscular spasm to overcome the obstruction is as good as any I have seen and he seems to have brought sufficient evidence to support the theory.

Regarding the class of patients uncured by appendectomy, every surgeon has them, and they soon teach one the necessity of caution in making a diagnosis of chronic appendicitis. What with a sclerosing appendix, the neurotic female, and the appendiceal hypochondriac, a surgeon is in constant danger of doing an unnecessary operation. But Dr. Stanton has given us a good working rule: Not to operate unless we have the characteristic syndrome.

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WHAT CAN BE GAINED IN THE THOROUGH STUDY OF THE TREATMENT OF THE SERIOUS WOUNDS IN THE LATE WAR IN ITS APPLICATION TO RAILROAD SURGERY? *

By EDGAR ALBERT VANDER VEER, M.D.,
F.A.C.S.,

ALBANY, N. Y.

PROBABLY the nearest approach to the surgery of our recent war, and which we meet with in civil life, are those wounds made by high explosives, accidental or criminal, or for incendiary purposes. In the past we have studied these cases along with our railway or industrial injuries, and have looked upon them as wounds somewhat similar to the shell and shrapnel wounds of the past war. The tearing and bruising of the tissues apparently is very much the same, and fractures of the long bones, in a majority of cases, are of a similar nature.

The high explosive shells of to-day, and the great amount of shrapnel used in the recent war, produced a wound in which the force and velocity of the missile has been such as to produce a very destructive looking injury, but which, in reality, was not so far reaching as the crushing, mutilating wound of railway accidents. In the latter, for many years, the railway surgeon has found it his duty, in many cases, to remove the mutilated tissue, and fractured bones, such as the carpal, the tarsal, the metacarpal and metatarsal, yet he

was often disappointed in realizing that he had not gone beyond the line of injured tissue sufficiently to relieve the sloughing area that followed, this becoming the source of infection in many well performed operations.

With the improved methods of coupling freight cars there are many less injuries to the hands and arms than in former years, nevertheless, slipping on icy tracks, and accidents in which the injured person falls, and is carried under the wheel of the car, with the crushing of a foot, an arm or leg—possibly both—does not lessen. These are the cases wherein it is desirable to gather all the practical points and experiences regarding the manner in which similar wounds have been treated during the great war through which the nations have been called to pass.

Fractures of the long bones, like those produced by the minie ball, during the Civil War, in its destruction, by comminution of the bone, and injury to blood vessels, nerves and muscles, has not been equalled by any of the rifle bullets of to-day.

It took the civil surgeon many years ere he ceased making contributions to pathological collections of the foot and leg, by amputation in that form of injury known as Pott's fracture. It was not until the introduction of aseptic surgery, and sterile dressings, that success attended his conservative efforts.

Now, if by careful study of the splendid papers, and the work that has been accomplished the past two years in the treatment of these major operations, by our army surgeons, the so-called railway surgeon can advance a little further, and be able to save more of the crushed tissues due to this form of accident, he may then be conferring upon the recipients of these injuries that great benefit which I have just referred to in another form of accident.

We must not forget that in the first year of the world's war much that had been acquired in the study of railway accidents was overlooked. This is especially true in regard to the treatment of tetanus. It was nearly a year before the English surgeons saw the necessity of the prophylactic employment of tetanus antitoxin, and it took a long time for the army surgeons of the Allies to realize that it was not possible to treat these cases with sterile dressings, as we would a clean cut wound. Infection presented in fully 85 per cent. of these cases, the wounds suppurated and became an alarming feature.

The observation of the general officer was that when the surgeon decided that removal of all injured tissue could be accomplished, the reaching of injured muscle, the repair of nerves and tendons and blood vessels, thus making a comparatively clean wound, it could then be treated on aseptic lines, with sterile dressings, and with most gratifying results. Every railway surgeon is able to give his experience along the lines of

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

having most successful results follow thorough drainage, and more or less saturation with aseptic solution.

The wiring and treating of the shaft of a long bone, and later its application to some of the irregular bones, such as the clavicle, and others, brought most unexpected and excellent results.

In the study of the treatment of injuries somewhat akin to the more serious ones met with in military surgery in the past war, like those of crushing wounds of the chest, pelvis and injuries to the contents of the abdominal cavity, in many instances the railway surgeon had demonstrated that the earlier surgical intervention is carried out—so soon as the patient is somewhat recovered from shock—the better will be the results.

The sooner fractured scapulæ, ribs and sternum can be placed at rest, with or without drainage of the contents of the chest, the more satisfactory become the results. This applies especially to the pelvis and its contents, such as the bladder and large intestines, and equally true of the contents of the abdomen. In penetrating gunshot wounds of the intestines, as well as bruised and crushed intestines, where early, prompt suturing and resection has been performed, and the patient kept thoroughly quiet, a fair percentage of recoveries follow.

There prevailed at first, and for quite a long time, the belief that penetrating wounds of the abdomen and intestines should not be treated at once, at least not until the cases could be moved sufficiently far to reach a properly arranged operating room, but, if I interpret later conclusions aright, this plan has not proved satisfactory.

When we read carefully the articles published in our medical journals, and the private letters received from our old associates, or men who had been our students—so many developing into splendid surgeons—we recognized it took the army surgeon some time to realize these cases could not be moved any great distance.

That whether it be of shell, or shrapnel, or the less dangerous bullet wound of the machine gun and rifle—and this includes complicated fractures—there were certain cases that only by giving immediate treatment did better results follow.

It was soon demonstrated that in keeping these patients in the Evacuation Hospital for a short time, with such fixed dressing as made them comfortable, and permitted their transportation later, both surgeons and patients were relieved by a lessened mortality.

Another factor of great value was the labeling of wounded men with a history of the case, and what had been done, avoiding, as much as possible, the handling of the wounded soldier: not interfering, unless there were symptoms of the wound becoming infected, through well known signs, then redressing, and in some few cases an additional operation was required. Then the reports of recoveries became more gratifying.

There is much in this for the railway surgeon to comprehend. Many cases of railway injury are transported too soon and too far. What little vitality the patient possesses is often wasted and lost by a long ride on a stretcher or in an ordinary car.

Small hospitals in the lesser towns will be likely to reach and remedy somewhat this unfortunate condition.

Undoubtedly we are to gather instruction from the further study of the treatment of fractures. The literature seems to emphasize that the use of mechanical contrivances, for plating and fixation of the bones, otherwise, has not, to any great extent, advanced the knowledge already acquired in civil practice, but we can gather a great amount of wholesome instruction, as we note the elaboration and development of the Nathan Smith suspension suggestion, in the treatment of fractures.

To-day this treatment, by what may be styled the bed splints, has been greatly improved by the original and inventive skill of our own Dr. Blake, with, also, the thorough treatment of wounds by the Dakin-Carrell method of irrigation, when the latter is required.

This must greatly attract the attention of our railway surgeons.

There are other methods, however, that command our respect, and really relieve the criticism that is made of the latter being so expensive, which is true to a great extent; however, there is much to be gathered which must bring comfort, in many instances not only to the patient, but particularly to the railway surgeon.

These are the days of expensive hospital treatment, and, unquestionably, there are many neat homes in which more accident cases will be treated than in the near past. The railway surgeon will find it necessary to place his patient in a comfortable, safe room at home, under the guidance of the good wife, sister, mother or some female member of the family, with the aid of the guild or district nurse in her visits once or twice a day. Results will become more satisfactory and encouraging as the civil surgeon applies the knowledge acquired from the experience of the military surgeon.

Now that so many smaller hospitals are being established in larger villages and smaller cities, we will have competent surgeons to treat these cases, resulting from the experience acquired in the care of wounded soldiers.

Laboratory investigation and reliable reports are becoming more and more numerous, and this will be a great aid to the railway surgeon.

Beyond a doubt the study of the results in transportation of the wounded—and brought to our attention by the care of the thousands of injured men who have been looked after during

the past war—will prove a most impressive lesson, and offer much that is to be of great value. This is especially true in injuries of the upper and lower extremities, and such as we have referred to elsewhere.

The writer realizes that this paper can only touch, in, perhaps, a somewhat disjointed manner, upon many questions that have arisen in the treatment of other really serious wounds, and which have a bearing upon the work of the railway surgeon. The duties of the latter will continue, railway accidents will never entirely cease. There are problems before the railway surgeon not yet settled, but the aid received from the treatment of these seriously wounded men in the late war have for him a sincere and practical meaning. There is a similarity in these injuries in which treatment is practically the same. The shock of serious railway accidents is much like that of the cases we are referring to in military surgery. A distinct contribution presents in the treatment of shock in these war cases from whatever cause. The wounded man, in many instances, is not removed from the stretcher, heat is applied, in some form, infusions and transfusions, also other remedial methods are carried out. There is no waste of the little remaining vitality he may be possessed of. Too often the railway surgeon is compelled to transport his case too far and he should be provided with a temporary dressing room at railway centers for the immediate care of such serious cases as at times present.

In the surgery of the war the immediate treatment of hemorrhage has brought out some strong points, and illustrates the difficulty of the transfusion of blood at the front. It is quite impossible to have a donor ready whose blood has been examined and pronounced appropriate for the recipient. The method of doing it is not so difficult, but the laboratory preparations are quite entirely out of the question.

Much has been written regarding the preparation and preservation of the blood for transfusion, but the fact remains that little of practical value has been added to our knowledge of the solution of the problem. The use of the normal saline solution, in the form of transfusion, and then some other methods of intravenous infusion, seem to have established some facts that will be of value, but the embarrassment that at times presents to the army surgeon, in the form of acute hemorrhage, also offers many anxieties to the railway surgeon.

When thoroughly investigated, this whole subject will undoubtedly develop much that will be of value and benefit, as it pertains to this part of railway surgery. Taking the blood pressure every half, one or two hours, and, especially, watching the diastolic pressure, impresses one very much as of great assistance, while under-

going some form of transfusion. Cases that have seemed almost hopeless show the earliest improvement in the blood pressure. All of the work that has been accomplished by Dr. Crile, and others, is a real contribution of great value to the railway surgeon, also to the surgeon who is working at the first aid stations at the front.

The old students of my father and myself have written some very interesting letters which contained valuable suggestions on the treatment of hemorrhage. The earlier suggestions of our civil surgeons, and precision in the use of instruments, have proved of great value.

Like the selective draft, it is marvelous to note how perfect has been the immediate care of the wounded, considering how short a time was given for preparation.

Strange as it may seem, the after care, and that in cases of sickness, in its various forms, has not kept up so good a record, as noted in the mortality list now being published. In the mortality column diseases are now showing an excess that is very sad. The epidemic of influenza has had its serious effect, and the proportion of deaths due to disease is becoming far in excess of those dying from wounds.

May the railway surgeon be permitted to so improve the treatment of his desperate cases as to lessen the civil mortality statistics.

Discussion.

DR. EDWARD S. VAN DUYN, Syracuse: I agree very heartily with the deductions Dr. Vander Veer has made as to the value of army experience abroad relative to the care of the severely wounded in railroad accidents. I should like, however, to call attention particularly to two points from which I believe the railroad companies could realize great advantage by their adoption as guiding principles in the care of severe accident cases.

First: Energetic and efficient treatment for shock after injury should be promptly begun. Our experience in the care of the wounded and injured at the front early established this as a routine practice. Such early treatment could easily be provided for in a portion of a caboose attached to a wrecking train. It should be given over to the medical department and be prepared to give the most modern treatment for shock at the earliest possible moment. Two to four beds should be arranged for easy riding and efficient heating of the patient's body. Apparatus for intravenous infusion of saline or gum solution should be at hand and ready for use, and protective splints. All this became routine preparation at the front. Lives now lost would be saved and the severity of conditions lessened.

Second: Thorough and the best treatment, even if delayed. At the emergency front hospitals the

question constantly arose whether all cases should receive some treatment at once, if that treatment could be quickly performed, or should the patient treated receive complete treatment as in radical operation, X-ray work, etc., with consequent delay. Careful observation and study proved conclusively that in most cases much better terminal results were obtained even where treatment of the injury was thus delayed often twenty-four to forty-eight hours until such time as it could be done thoroughly and in the best possible manner. All this is applicable to the treatment of severe railroad injuries.

Immediate treatment for shock with first aid dressing with efficient splinting followed by the necessary operative measures, delayed until the patient has been transported to a properly equipped hospital, would insure more prompt and favorable terminal results.

Work done at the place of injury with hastily and partially arranged operating facilities, with only such assistance and materials as may be available, usually has to be undone for more complete and thorough work upon arriving later at a hospital, and not only is there no gain derived but it moreover results in further delay and often in serious additional harm.

In these accidents no surgeon should ever sew up a wound or do anything further than ligate a bleeding vessel under conditions less desirable than those obtained in a good hospital. The railroads will best serve their injured by preparing measures for prompt transportation of the injured in case of accident to the nearest properly equipped hospital.

DR. FENTON B. TURCK, New York: Dr. Vander Veer has called our attention to the change in the treatment of wounds and shock that had to be adopted in the latter years of the war. Débridement became the common practice. Discarding all the methods founded on old theories of wound treatment used in the beginning of the war, they returned to the methods of the Napoleonic wars, the method of Larry, who said:

"The effects of commotion ('shock'), far from being aggravated, diminish and disappear insensibly after the operation." Larry's method of débridement obviously resulted from the French surgeon's observations and experience in the American Revolution. Dubois, who served with the French troops in America during the War of the Revolution, states that "American surgeons amputated at once (primary operation) and lost but few, but the French delayed and lost many." This is evidently one of the many original ideas that were developed under Benjamin Rush, the surgeon-general of our armies during the Revolution. We now understand the reason why these operations were so successful. It was because

the shock (commotion) could not develop because the disintegrating tissues that cause shock (traumatic shock) were removed.

As autolized tissue produces a specific toxin, we are now able to produce a specific antitoxin. This is made by injecting horses with human autolized tissue for six months. This is both prophylactic and curative in wound injuries and in shock.

THE PRESENT CONCEPTION OF THE SIGNIFICANCE OF CARDIAC PHENOMENA.*

By ALLEN A. JONES, M.D.,

BUFFALO, N. Y.

IN reading the older writers upon the heart, much thoughtful wisdom is found; they displayed deep clinical knowledge of cardiac disease. Not only were the valvular disorders clearly understood and explained, but also the rôle of the myocardium was appreciated and soundly dealt with.

The pathology of cardiac disease was well studied and elucidated and sound principles of treatment were laid down. There remained, however, many elements in pathology and clinical behavior awaiting explanation. Particularly in the matter of the arrhythmias was adequate understanding wanting. The deeper studies of the physiology of the heart brought out the existence of special nodes and muscular paths through which the regulatory mechanism works, and the living attributes, excitability, tonicity, contractility and rhythmicity given to the cardiac structure serve to clarify our vision of cardiac phenomena.

The application of delicate graphic instruments in the study of the heart's action in health and disease served to illuminate many shaded or dark spots in our understanding of the phenomena. The sphygmograph was one of the earliest of these instruments, and the pulse was by its tracings better understood; arterial hypo and hypertension were more delicately appreciated and irregularities of the pulse were illustrated as never before. Indeed, the sphygmograph led the way to the polygraph and became an important item in its construction. The sphygmomanometer added its valuable data to the study of arterial blood pressure, and its universal employment to-day speaks for its value and usefulness.

Among the many valuable data gleaned from blood pressure studies, so familiar now to all physicians, there is one that is not so well known; I refer to the difference between the blood pressures in the arm and leg in aortic insufficiency. In a very recent contribution by Major Edward H. Goodman (*Am. Jour. Med. Sciences*, April,

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

1919) he gives the results of his observations. "The difference may be as much as 130 MM Hg., and in certain cases, leg pressure is double that in the arm. When there is a difference of over 60 MM Hg., the lead is toward aortic insufficiency, although if below 60, there is no certain proof that aortic insufficiency does not exist." It is interesting that in five of ten cases recorded, no diastolic pressure could be read, whereas pressures from 28 to 80 were read in the arms.†

The Roentgen rays contributed their large share to visualize and illustrate enlargements and displacements of the heart and aorta, thereby making diagnosis of these conditions more definite and positive. And lastly, the electrocardiograph with its marvelous tracings of the cardiac cycle and of heart murmurs has added its wealth of information to the search for a deeper understanding of the physiologic and pathologic cardiac phenomena.

It would be a serious omission to neglect to recognize the very great value of post-mortem studies following clinical observations of the diseased heart. Having examined the heart in the ward, and having made critical observations upon the symptoms up to the time of the patient's death, and then having the pathology disclosed at autopsy, surely affords knowledge of the first order.

Thus, the clinico-pathologic conferences, as directed by Thayer, Cabot and others, have done much to establish a wider and more accurate knowledge of heart disease. It might be said, indeed, that lacking the finer and more sensitive instruments of precision of this modern day, still would the knowledge of cardiac disease grow and spread through autopsy studies succeeding bedside observations.

Particularly is our present conception of the significance of heart block and other arrhythmias amplified by the revelations of the polygraph and electro-cardiograph; whereas, formerly, pathologic bradycardia was attributed rather vaguely to coronary sclerosis and myocardial degeneration, its significance is now definitely known to mean disease of the auriculo-ventricular bundle which precludes the passage of impulses originating in the auricle to the ventricle. The dependence of the syndrome upon syphilitic disease of the His bundle, is well established, though it is also occasioned by myocarditis following infections and by sclerotic changes in the bundle which are not syphilitic in origin. We should remember that partial or complete block is not susceptible of positive diagnosis without the modern graphic methods. The association of the Adams-Stokes syndrome with heart block

has also been emphasized by modern studies, though the exact explanation of this phenomenon is yet undetermined.

In this connection a very interesting phase is termed "Arborization block," which means that the atrioventricular bundle branches distributed in the ventricular myocardium are diseased in such manner as to interfere with the regular and smooth transmission of impulses coming through the main bundle. This condition gives rise to electrocardiographic tracings which show a notched and widened Q.R.S. group. The subject has been carefully studied by E. P. Carter, B. S. Oppenheimer, M. A. Rothschild, G. C. Robinson and F. A. Willius. From the Mayo Clinic Willius presents a study of one hundred and thirty-eight patients with arborization block, and states that: "The electrocardiographic requirements warranting this diagnosis were, (1) notching of the Apex R, (2) splintering of the ascending or descending limb, and (3) in complexes of normal contour, a base width exceeding 0.10 second." The pathologic conditions encountered were endocarditis and cardiovascular renal disease most commonly, and thyrotoxic adenomas, exophthalmic goitre, arteriosclerosis, and syphilis less frequently. In some of the cases no etiology was determinable. The seriousness of the complex is brought out by the fact that 69.6 percent of one hundred and twelve of these patients died, with an average duration of life after the examination of eight and a half months.

At present our conception of premature contractions assumes that a pathologic impulse arises either in the auricle or in the ventricle which causes the ventricle to contract out of the time of its regular sequence. That this ill-timed contraction does not necessarily imply the existence of morbid cellular changes in the heart structure, and further that it ordinarily has no serious significance, but is largely due to an over excitability of neuro-muscular mechanism, serves to allay our apprehension and guide us in therapy and prognosis. One of the practical points in connection with our present knowledge of premature contraction is that it may be caused by digitalis, and usually does not call for, nor yield to, its administration.

In paroxysmal tachycardia the heart is, during an attack, under the control of a new focus initiating muscular impulses at an abnormally rapid rate. As Lewis says, "This focus lies, usually or always, at a point which is removed from the pacemaker." That paroxysmal tachycardia may occur in association with endocardial, myocardial, arterial, renal, or pulmonary disease, should always be borne in mind, but it not infrequently occurs independently of such conditions and without discoverable cause. Our present view of the prognosis in this affection takes into consid-

† Major Goodman's studies were made on the Special Board for cardio-vascular examinations, Camp Jackson, S. C., in a special inquiry as to "The Differential Diagnosis between Mitral Stenosis and Aortic Insufficiency," and one of the questions entertained was: "How frequently does it become necessary to distinguish between mitral stenosis with a Graham-Steel murmur and an aortic insufficiency with a Flint murmur?"

eration the ability of the heart muscle, during and following the paroxysm, to withstand its effects. It may or may not be serious, but should always be carefully observed and considered. No certain means of control is known.

As busy clinicians, I think our attempts to differentiate between auricular flutter and paroxysmal tachycardia are often confusing and futile. The extreme heart rate is alarming, as is often the patient's condition. Lewis finds flutter frequently associated with heart block and asserts its invariable auricular origin. Its certain recognition depends upon graphic methods and its treatment consists in giving digitalis or strophanthus in large doses in order to transform it into auricular fibrillation, when, upon withdrawal of the drug, the disorder ceases.

Perhaps no cardiac phenomenon of common occurrence has been more clearly explained by modern conception and elucidation than has the irregularity which develops in most cases of valvular and myocardial diseases at some period of their existence.

To the thoughtful work and observations of James Mackenzie, we are especially indebted for the present understanding that the establishment of "nodal rhythm" accounts for the disturbances of regularity and heart rate in dilated heart.

In normal heart rhythm the impulse starts at the sino-auricular node and auricular contraction precedes ventricular, whereas, in the abnormal rhythm of broken compensation so commonly represented by auricular fibrillation, the impulses originate in the auriculo-ventricular node and ventricular contraction then precedes auricular by about one-tenth of a second.

Since Withering called attention to the value of digitalis in cardiac disease, its effect in slowing and regulating the heart has been known, but its mode of action not clearly understood. At present, we know it lessens the conductivity of the bundle in its regulatory action on the heart, producing, as it were, a salutary state of partial heart block to guard the ventricle against the bombardment of myriad abnormal impulses from above. The modern conception of the significance of this therapeutic phenomenon has been attractively put forth by Bastedo.

At the present time, the etiologic relation of focal infection to cardiac disease is more fully appreciated than formerly, and not only may disorders of the heart be greatly alleviated, or cured, by removal of focal infection, but their prevention may also be accomplished thereby. In earlier years it was known that infections of acute articular rheumatism, scarlet fever, gonorrhoea, and septicemia led to heart disease, but the modern conception of infections as related to cardiac disease is much more comprehensive and elaborate.

Perhaps nothing has done more to elucidate cardiac problems than the late war. Those entrusted with the selection of men for military service and those in the service having charge of soldiers in camps and in the field have had the largest opportunity in the history of the world to make critical observations upon the behavior of the heart and circulation under various conditions. The internists on the Medical Advisory Boards were, as never before, put upon their mettle, as it were, and the numerous heart cases referred to them were given searching and analytic consideration. As was inevitable, many mistakes in judgment were made and the medical officers in charge of the camps were enabled, by keeping the inducted men under test observations for a longer or shorter period to determine the circulatory status of each, and to return to civil life those failing to measure up to the requirements of active military service. Among the many things learned in this enormous, unusual and nation-wide heart clinic, a few will stand out prominently and should have an abiding influence upon the work and judgment of clinicians for years to come.

It was well known before, but has been emphasized by the selective service experience, that a heart with a murmur may be a good heart and be capable of bearing heavy work and strain. A few conditions are essential, however; first, that the endocarditis which caused the murmur shall have ceased all activity and progress; second, that the myocardium shall be unimpaired and capable of completely compensating for the lesion under all conditions; third, that the heart be not subject to the effects of focal infection, hyperthyroidism, syphilis or nephritis, and fourth, the heart shall be of normal size. The nature of the murmur is also vastly important. If it results from mitral stenosis or aortic insufficiency, the heart will in all probability break down under strain. Under conditions considered above, if the murmur is a faint apical systolic, or is heard in systole in or near the pulmonary area, or is cardiorespiratory in type, intensive nervous and physical activity may be efficiently borne.

Another phase of cardiac pathology which has been brought more prominently forward is that related to atypical hyperthyroidism. The tachycardias encountered in the selective service work suggested hyperthyroidism in many cases. Numerous registrants were rejected, but some were sent to training camps and there were found to develop well-defined evidences of hyperthyroidism under mental, nervous and physical hardships. It has been found that the thyroid heart will not endure such strain and that its incapacity must be recognized.

Another type of circulatory disorder has been more fully studied and understood of late. It is found in the young man or woman usually of

slender build, long chest, long sharp costal angle, thin abdomen lacking in tone with gastro-enteroptosis; the hands and feet are cold, clammy and cyanotic, with poor capillary circulation. The heart is irritable and frequent, the arteries feel tense, yet the blood pressure is often found low. There is sometimes cardiopptosis, hepatopptosis and nephropptosis; indeed, the Stiller habitus is decided. The heart pounds and races upon moderate exertion or excitement. Fatigue attends early upon sustained exertion. The condition typified by these cases has been termed neurocirculatory asthenia or effort syndrome (Thomas Lewis), and it has been found in the military training camps that, with some exceptions, they are poor subjects for active first line service. Not all cases are as exaggerated as in the above described condition; some are quite well up in weight and look physically fit, but their hearts are apt to present apical systolic murmurs off and on, and tachycardia develops under insufficient provocation; dizziness, mental confusion, and a sense of physical weakness are apt to supervene under strain, and they are found generally inadequate to military life.

Before other measures are adopted in the treatment of neurocirculatory asthenia, two things should be done. The first is to modify or abolish, if possible, focal infections such as may reside in diseased tonsils, and the second is to obviate as far as possible the effects of gastro-intestinal stasis, which I feel convinced is an important factor in some of these cases.

In the endeavor to bring about improvement in those falling into this class, it has been found that graduated training should be conducted under the direct guidance and supervision of a medical officer of steady head, kindly methods and discerning judgment. A large degree of success has followed by such measures, and the whole state of neurocirculatory asthenia has been changed for the better in many individual instances. On the other hand, when this special upbuilding training is done by a non-medical officer with no technical knowledge nor experience, and with but poor sympathy with the physical state under which his men labor, discouragement and failure are apt to mark the endeavor. To medical men who have given conscientious thought and study to the subject, this is not surprising.

That much good may be done through scientific, controlled, personally observed exercise training, even in the presence of serious cardiac disease in the young, has been amply illustrated by such work as Barringer has conducted and shown. In this work, individualization is essential, and this is incompatible with mass training.

In the modern treatment of heart disease, the distinct value of the Karell diet deserves mention. With complete rest, the giving of no fluid nor food other than 800 cc. of milk each twenty-

four hours for three, four or five days, has proved a most valuable addition to our treatment of passive congestion and oedema of cardiac disease.

Let me draw attention to a modern method of the use of digitalis which is receiving attention and trial. I refer to the Eggleston method of quick digitalization by the use of full doses given in the first few hours of treatment. In his important paper, entitled "Digitalis Dosage" in 1915, Cary Eggleston presented a study of a large series of cases treated by doses of digitalis based upon the Hatcher cat unit. In this paper he states: "If the therapeutic doses for both tinctures and infusions be taken together as representing the dose of digitalis, the average of the average of the thirty-three courses of administration is 0.146 cat unit per pound of body weight. This will be regarded as the established average dose for digitalis, inasmuch, as the infusions and tinctures give practically identical figures." The plan is to give sufficient digitalis to produce full "therapeutic or minor toxic action" in from one to three or five days; some of Eggleston's cases were treated six or seven days. Great clinical improvement was noted promptly in many of the cases. The practical application of the method involves the calculation of the amount, say of a high-grade tincture required for a patient of a given weight, 0.145 cc. per pound. To quote from Eggleston: "In this way, it is possible to give a third to half of the total calculated therapeutic dose at a single administration, to follow this in from four to six hours with a quarter to a third of the total dose, and to give the remainder in a few doses of smaller size at intervals of from four to six hours. By this plan of administration, the full effects can be secured in from twelve to thirty-six hours in the majority of cases. The administration of half the total dose may call for the giving of from 5 to 15 cc. of the tincture at once." "It should be reiterated in this place that the use of such large doses of either digitalis or digitoxin as are here mentioned is not a safe procedure unless the patient can be under nearly constant observation and unless the effects of the treatment can be graphically recorded at frequent intervals. This practically limits such procedures to hospital practice and to those well versed in the significance of polygraphic and electrocardiographic records." (Cary Eggleston, *Archives of Internal Medicine*, July, 1915.)

In the modern treatment of decompensated heart disease intravenous administration of strophanthin in half milligram doses is a method of signal value in some serious cases, and intravenous use of digitalis is also commonly practised. While liquid digipuratum has been chosen mostly for such form of administration, the tincture may be safely used intravenously if injected slowly.

THE CLINICAL COURSE AND TREATMENT OF VINCENT'S ANGINA.*

By CLEMENT F. THEISEN, M.D.,

ALBANY, N. Y.

WHILE it is now an accepted fact that the finding of the fusiform bacillus with the spirillum or spirochete, in smears from throat swabs, makes the diagnosis of Vincent's angina easy and positive, it must be remembered that this bacillus is not the specific organism of Vincent's angina only, but is found also in cases of mastoiditis, broncho-pneumonia, diphtheria, hospital gangrene, throat syphilis and stomatitis. Cultures and smears usually show mixed infections with other organisms such as the Klebs-Loeffler, pneumococcus, streptococcus and staphylococcus. Mistakes in diagnosis are sometimes made because only cultures are taken, and not throat swabs. The diagnosis is easily confirmed in Vincent's if smears from the throat swabs are examined microscopically. The fusiform bacillus is practically always associated with the spirillum or spirochete. The spirochete is a thin spiral from six to twenty microns long, and two to four microns wide. The fusiform bacillus is a rod-shaped organism from four to twelve microns in length and two to six microns in width. Both these organisms flourish around decayed teeth, in diseased tonsils and in ulcers. Both organisms stain readily, among the best reagents being methylene blue, carbol-fuchsin and gentian violet.

The writer has always been of the opinion that bad teeth, with the attending spongy condition of the gums, are among the most important etiological conditions in cases of Vincent's angina. If cases are seen from the onset, before ulceration takes place, the entire clinical course of the disease can be studied. A thin grayish pseudo-membrane forms on the gum, particularly around a decayed molar, and extends to the tonsils, and often to the mucous surface of the cheek. In a few days, unless treatment is immediately effective, a superficial ulceration forms under the membrane, and in some cases there is swelling and tenderness of the cervical glands on the same side. In the favorable cases, and if radical treatment is promptly started, the condition can be limited to one side, although in many cases it becomes bilateral.

The onset of the disease is fairly sudden, being sometimes ushered in with a chill and temperature elevation. In children this often reaches 104° and 105° F. In adults the temperature does not run as high as a rule, except in the

worst type of the disease, with deep destructive ulceration. In this class of cases there is also very marked prostration, with headache and very painful deglutition. This is at times so severe that it is difficult for the patient to get sufficient nourishment. Suppuration of the cervical glands is rare, but has been seen by the writer.

In the favorable cases, the mild form, the course of the disease is not longer than from a few days to two weeks. Recurrences, in the same patient, are not unusual, and are mainly caused by neglect in correcting the underlying causes, dental caries, diseased tonsils, pyorrhoea and improper care of the mouth generally.

Halsted, in his very complete paper (*Trans. A.L.A.*, 1912), states that there are two distinct clinical types of the disease, the one form to be differentiated from diphtheria and other non-diphtheritic pseudo-membranous anginas, while in the other form localized ulceration simulating syphilis very closely is present.

In the writer's experience the second type mentioned by Halsted occurs almost exclusively in adults, while almost all authors agree that the first type, simulating diphtheria and other membranous conditions, particularly those in which the streptococcus predominates, is far more frequent in young people.

This seems to be the simplest and best classification, although many departures from the usual clinical picture occur in both classes. The one constant symptom is the peculiarly offensive and distinctive odor, which in the severe ulcerative form is almost unbearable. The diagnosis can almost be made by that alone. The fact that the type of the disease in children so closely resembles diphtheria, accounts for many of the mistakes in diagnosis, because in this type cultures only are examined, and not smears from throat swabs.

In the Michigan State Laboratory, in 1909-10, out of six hundred and eighty-seven throat swabs sent in to be examined for diphtheria, one hundred and seventy-eight were not cases of diphtheria at all, but proved to be Vincent's angina. A clinical diagnosis of diphtheria had been made in two hundred and twenty-four of the six hundred and eighty-seven cases, but the bacteriologic diagnosis proved that only one hundred and twenty were true diphtheria cases.

Forty-six of the cases clinically diagnosed as diphtheria proved to be Vincent's angina.

Vincent himself found the disease in two per cent of all cases of membranous anginas.

Lublowitz found the specific organism in six out of thirty-eight cases of ulcerative stomatitis.

Rodella found them in about one-third of all the pseudo-membranous anginas he examined.

Cases of bronchitis have been reported by Rothwell (*Jour. Amer. Med. Asso.*, Vol. LIV., 1910), in which the main organism found was the fusiform bacillus.

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

Fatal cases are not as uncommon as is generally believed, and in children, some cases, in which a diagnosis of laryngeal diphtheria had been made, and in which the Klebs-Loeffler bacillus was not found, were undoubtedly cases of the ulcerative type involving both the pharynx and the larynx. These cases are always serious, and in children, when a pseudo-membrane is also present in the larynx, are sometimes fatal.

Three fatal cases have been reported by Bruce, and others by Meyer and Halsted.

The clinical course of the disease may be best given perhaps by a brief description of two typical cases seen by the writer, one unfortunately having a fatal termination.

The first case, that of a child, aged 3 years, was seen from the beginning, and was of the mild pseudo-membranous form closely resembling diphtheria. The attack started with a chill, headache, malaise, and a sharp temperature elevation. Inspection of the throat showed a grayish membrane covering the left tonsil and part of the soft palate on the same side. The odor was typical, so no culture was taken, but smears showed the typical microscopical picture. If the writer had not seen so many cases of Vincent's, diphtheria would possibly have been suspected, and valuable time in starting proper treatment lost. Cervical glands enlarged and tender. The membrane could be brushed off, and underneath there was a superficial ulceration. The treatment, which will be described later, and which is always used by the writer, was started at once, and the child had a normal throat in four days. Smears taken again at this time were negative, no fusiform bacilli nor spirilla being found.

The writer is of the opinion that all cases of Vincent's, if they could be seen from the onset, are simple and yield to treatment readily.

The severe ulcerative and fatal cases were either not seen early enough for treatment to be effective, or, as often happens, did not consult a physician until the disease was far advanced.

The disease, if not treated promptly, or if treated for some other throat condition, advances rapidly to deep destructive ulceration, often involving the entire pharynx and adjacent mucous surfaces. Most cases start, I believe, as mild pseudo-membranous forms of the disease.

The other case was of the worst ulcerative type and demonstrated the result of neglect of treatment. This case terminated fatally. The patient, a man, aged 31 years, walked into the office with the history of having had a sore throat for several weeks. The odor when the patient opened his mouth to have the throat examined was overpowering and almost unbearable. He stated that he had received no treatment at all and had been able to take very little nourishment for over a week.

The ulcerative process, which had evidently been going on for some time, had destroyed the soft palate, both tonsils, and there were deep ulcerations on the mucous surfaces of both cheeks and the posterior pharyngeal wall. The gums, around the last molars, which were decayed, were also badly involved. The cervical glands were large and tender. Temperature 103° F., pulse 120 and of bad quality. Patient appeared deeply toxic and was very weak. Smears from throat swabs showed the typical microscopical picture of Vincent's. He had an acute nephritis, the urine being loaded with albumen and casts. I told his family that there was little hope, and in spite of the most vigorous treatment he died about ten days after I saw him. No autopsy was permitted. The cause of death, as it usually is in fatal cases, is the result of extreme exhaustion, toxæmia and starvation. It is impossible for patients having such extreme ulceration of the mouth and fauces to receive sufficient nourishment. I have no doubt that this patient's life could have been saved if he had been seen when the disease started.

Two other fatal cases have been reported by the writer (*Trans. Amer. Laryngol. Asso.*, 1918).

There is an intermediate form of the disease between the simple pseudo-membranous form, seen usually in children, and the destructive malignant type just described. In this variety, which has usually been going on for a week or ten days, before seen by a physician, the ulcerative process is not nearly as extensive. It may be confined to only one tonsil and the mucous membrane in the immediate vicinity, or both tonsils may be involved.

These cases, while not as favorable for treatment as the simple form of childhood, practically always get well, but run a much longer course than the cases that are treated from the beginning. Both the malignant and the intermediate less serious forms resemble the ulceration of throat syphilis so closely that mistakes in diagnosis are easy. In fact, many of these cases are treated for syphilis at first. Cases occur in which there is a combination of syphilis and Vincent's, the Vincent's probably developing in the syphilitic ulcers. The writer has seen this combination, with a positive Wassermann, and the clinical and microscopical evidence of Vincent's.

Treatment.—It is of course well known that arsenic in some form has almost a specific action in some cases. Salvarsan locally and intravenously, in bad cases, is of great service, and potassium iodide internally is a good adjunct to the local treatment.

Halsted, in the paper before mentioned (*Trans. Amer. Laryngol. Asso.*, 1912), has had good results with the use of enesol, an arsenate of mercury used hypodermically. Local applications too numerous to mention, have been recommended by different authors.

The writer has found that a strong solution of potassium chlorate, powdered alum, carbolic acid, glycerine and water, is almost a specific in some cases, and clears up the throat lesions quicker than anything else. It is used as a gargle, for adults and children old enough to use gargles.

In very young children it is used as a spray, the strength of the solution varying with the age of the patient.

After an attack, the mouth should be carefully examined, and all bad teeth and diseased tonsils removed.

Proper care of the mouth and throat is of the greatest importance. A 20 per cent. alcoholic, Seilers or Dobell's solution, if used several times daily, will not only prevent attacks of Vincent's angina, provided of course that the usual predisposing causes have been removed, but will go far in rendering immunity for most all anginas and other infectious throat conditions.

The strong carbolyzed astringent solution above mentioned, will in the writer's opinion, if used early, clear up the throats in cases of Vincent's more quickly than any other method of treatment. It should be used very frequently, every half hour in the severe cases, and every hour or two in the milder cases. After a few days, if the throat lesions show a tendency to clear up, it is used less frequently.

Vincent's angina is really a very common condition, and if we are on the lookout for it, it will be found much more frequently than we think.

THE INFLUENCE OF DISEASED SINUSES ON THE BODY IN GENERAL.*

By GEORGE F. COTT, M.D.,

BUFFALO, N. Y.

DEFINITION: Any symptoms, or group of symptoms, occurring to the patient, that can be traced to no other cause, I prefer to refer to them as due to the sinuses, if diseased. These cavities, in many instances, manifest few if any symptoms. Some symptoms more or less severe may be caused, as Sluder claims, from closure of the natural openings; others by direct irritation of the sensitive nerves, or neuritis, or soggy nasal membrane, polypi, etc., perverted nutrition, or disturbed innervation, inflammation or change in bone structure. When they occur one can easily trace them to their source. There are, however, a group of symptoms more or less remote from the sinuses which can easily be attributed to some other cause. It is this class of cases I wish to present to you for consideration.

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Some of these symptoms are harassing cough, lasting often for years, continued weakness, cold extremities, low blood pressure, subnormal temperature, tinnitus, headache, dizziness, loss of weight, listlessness, lack of ambition. They are due, I believe to toxemia, probably of protein origin.

The kidneys may become involved, endocarditis, appendicitis or other infections develop. Some of the more remote conditions that do occur and can be traced to apparently quiescent sinuses are meningitis, tuberculosis and pneumonia.

The nasal chambers are assumed to be quite sterile normally, but when irritated so as to cause rhinitis, I have found pneumococci, streptococci and the influenza bacillus present. It is not so difficult to assure oneself that the sinuses are abnormal, but it is most difficult to prove that these diseased cavities are the primary cause of the symptoms observed. The profession is becoming more and more convinced that the sinuses are the seat of much trouble, especially when their patients do not respond to the ordinary treatment. When the patient is referred to the specialist he or she has generally been gone over pretty thoroughly, and nothing found. If we will now carefully consider the findings of other examinations, then add our own, we can often clinch the diagnosis. Sometimes a blood count seems necessary. Wassermann test will occasionally clear up the case. All cases that do not respond to treatment are subjected to the Wassermann test.

Case 1.—Mrs. S., a little emaciated woman, age 53 years, but looks 65, mother of a physician. Intense pain on both sides and back of head. Eyes tire easily followed by pain over them. Ophthalmologist reports eyes normal. Headache as long as she remembers. Cured both ethmoid cells at the same time, now four years after operation she looks ten years younger and feels fine. Occasionally she gets a slight headache but nasal cleansing generally gives her relief. She told me several times that she would rather commit suicide than endure that pain again.

Case 2.—Miss J., age 18 years. Frequent colds in head always followed by discharge from left ear. Has several small polypi left side in middle meatus, considerable secretion of a mucoid character running down the post-nasal space. Coughs, at night only and raises occasionally. Smear negative, chest examination negative. Curettage of ethmoid cells relieved her in short time. She has had no recurrence of discharge from ear nor cough since the operation seven months ago.

Case 3.—Mrs. S., age 31 years. Pain in left parietal region for several years. Sometimes absent for a few days. Complains of frequent colds upon the slightest exposure, but pain is more constant. Curetting the ethmoid cells seemed to relieve the pain for awhile, as perhaps any other operation would have done, but the

pain returned after a few weeks as severe as ever. A Wassermann was then done and report returned was three plus. That cleared up the case.

Case 4.—Mr. P., age 52, only complaint was conjunctivitis with severe pain especially after treatment by ophthalmologist. Has been suffering for eight months without any improvement. In the morning lids were closed with pasty secretion. Ethmoid cells found sclerosed and hard to break down, necessitating the use of a biting forceps. Next day reported that he had slept well without pain. One week later eyes slightly red with very little secretion in the morning. Left for home well satisfied with the result.

Case 5.—Mr. M., age 63 years. In June, 1918, while on business in N. Y., and waiting for a street car, felt his hands suddenly become numb and severe headache developed. All symptoms passed away in a few days. Five months later he had a second attack, in which he lost complete control of the right hand. Function returned in a few days but his physician kept him in bed for a week. Third attack seven months later when he lost control of right arm and face twitched for three days. These symptoms were relieved after three days. His doctor, a most competent man, could find no reason for these peculiar symptoms, unless it was mild apoplexy or some kind of infection, since the man was well before and between the attacks. If infection, there was ample cause for it from his ethmoid region and probably the closure of the anterior ethmoid cells on the right side which caused a partial vacuum or perhaps retained secretion. At any rate the septum impinged tightly upon the middle turbinate so that a probe could not be passed. He has now, after resection of the septum, had no recurrence in eleven months and is apparently in perfect health.

Case 6.—Mrs. B., age 27, plump and well built. Had a growth removed August 24, 1914, which involved the ovary and was the size of a foetal head and well encapsulated, not infiltrating the surrounding structures. Laboratory diagnosis was carcinoma. Her surgeon examined her December, 1916, two years and four months later and found no recurrence. I saw her first November, 1916. She complained of severe pain in occipital region with throbbing at times. Eyes trouble her occasionally; sometimes feels like pin wheels going around in left eye and sometimes blur when she can't see at all. Pain in head causes much depression. She gave me the following additional history: Pain began in June, 1916, and was very severe; four months later she became so dizzy that she would fall over; these attacks would occur every other day; then her vision would be so dim she could not distinguish the food on her plate. The surgeon examined her eyes and found beginning choked disc; all things considered he concluded she might have

developed a brain tumor of a carcinomatous nature. She was referred to an ophthalmologist who also found beginning choked disc. A neurologist confirmed the diagnosis of probable brain tumor. X-ray showed nothing. A rhinologist after five visits, found nothing wrong with her nose.

I curetted the left ethmoid cells in December, 1916. That night she slept considerable. One week later she had an attack of headache, but since then she has been perfectly well.

I saw the neurologist later and told him about the case; he said that those cases acted that way after operation, but all the symptoms would return within six months. I saw her two weeks ago, or two years and four months after operation and she said she has been perfectly well and would rather die than have that pain again.

Conclusion.—Some of these patients would probably recover with any kind of operation, but in such cases the symptoms will usually return after a certain lapse of time. I have observed two cases of pneumonia following chronic purulent discharge from the sinuses, two cases of tuberculosis and six of meningitis, among whom were two young physicians and a daughter-in-law of a physician, in the latter the streptococcus was found in the spinal fluid. None of the consultants could trace the cause of the two physicians' trouble to any other source.

A CASE OF RECURRENT TONSILLAR GROWTH.*

By JOHN J. RAINEY, M.D.,

TROY, N. Y.

THIS case report is made because of its unusual interest to me and because I have been unable to find many similar cases in the literature.

Patient.—Mrs. H. C., aged 61. For several years she had suffered from pain over left eye and a profuse discharge of pus from the nose. A physician removed some polypi from the left side of the nose but the headaches still persisted. To use the words of the patient, "Never ill enough to give up but feeling handicapped and troubled about the ultimate result." After an especially severe headache her physician sent her to me in October, 1917. The polypi and ethmoid cells of the left side were cleared out and the opening of the sphenoid enlarged. The headaches ceased but the patient still had some discharge of pus and a feeling of uncertainty. The left antrum was washed out and after a number of washings the antrum became normal. Up to the present time there has been no recurrence of sinus empyema. To quote the patient again, "Patient began to

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 6, 1919.

realize improvement and by contrast to wonder how she ever existed before. Great relief as to pain and a different outlook as to future."

Early in August, 1918, after returning from their vacation, two members of the family developed tonsillitis. A few days later the patient developed a swelling of the right tonsil and on August 9th, she consulted us. The condition presented was that of a peritonsillar abscess. The next day we made an incision at Chiari's point and no pus was found. A smear and a culture were taken and the bacteriological examination showed no evidence of Vincent's angina. The Wassermann also was negative. The tonsil seemed better for a few days. I went on my vacation at this time and Dr. Marsh saw the patient.

When I returned late in September, he told me the tonsil had all signs of malignancy. The appearance had changed by this time. The disease was confined entirely to the tonsil which was several times its normal size, the surface smooth and having the appearance of a fibroma. The mass was quite hard to the punch forceps. The pathologist's report was that the condition was inflammatory lymph-adenoid tissue, but the inflammation did not subside and the discomfort of the patient became greater. Early in November she was sent to the hospital and operated upon. We thought before making the first incision that we were going to enucleate the mass, but it was no longer hard and we were obliged to remove it by morcellation. A large clean cavity was left and apparently all diseased tissue was removed. Our patient felt considerably better after the operation, remarking how comfortable her throat felt. The pathological report was as before, lymph-adenoid tissue.

The patient came to the office about Christmas time complaining of a hardness on the right side of the uvula. Within a few days the fossa began to fill up, apparently from the uvula and the upper pole of the tonsil. There was soon a distinct line of demarkation above the anterior pillar encroaching high up on the palate. The uvula increased in size and was also oedematous. Great discomfort was suffered by the patient. Her voice changed and she began to lose weight. The only contradictory element in the case, as to malignancy, was the laboratory report. We sent the patient to the hospital again in January, 1919, and removed as much of the tissue as possible. When the limit of the tonsil was reached, the wall had a leathery feel. The cautery was used freely all over the denuded surface. At both operations there was little or no bleeding. The pathological report was as before—lymph-adenoid tissue. The cautery was used several times in the office. For a short time it appeared as if the disease was checked but almost overnight it flared up more alarming than ever. A large mass entirely covering the right tonsillar fossa, was seen spreading over the pillars and

pushing the uvula, now greatly swollen, over the left tonsil. The mass had a gray deposit and a well-defined line of demarkation. The lower pole of the tonsil, for a third of an inch, had not been involved at any time. Respiration interfered with, speech very thick, and breath very offensive. Swallowing of food painful. Patient became emaciated.

The patient was sent to Dr. Heublein, of Hartford, early in February, who applied radium. This was applied as a last resource as we believed there was no help. The result was almost miraculous. At present her throat is entirely clean and the only thing to be seen as a result of operation and radium is a perforation of the posterior pillar.

Dr. Heublein's report was as follows: "Clinically her throat presented all evidence of malignancy. The fact that the growth so rapidly occurred after extirpation would make one feel that it was of a highly malignant type. It has been my experience that the pathological report cannot always be relied upon and I feel that this was true in her case. A 100 mgr. tube of radium filtered through 3/10 mm. gold and hard rubber, using a special applicator mounted on a silver wire applied directly against the growth, was used for a period of three hours. On the same day the same dosage was applied on the outside, filtered through 3/10 mm. silver and distance filtration for a period of twelve hours. Shortly after the disappearance of the tonsillar growth the patient developed pulmonary symptoms that were marked by persistent attacks of coughing, moderate expectoration and a slight rise of temperature in the afternoon. The physical signs showed that the left lung was, to a large extent, not functioning. The X-ray plate taken by Dr. Hull, showed a shadow, indicating solidification of the lung, which followed closely the left border of the pericardium and extended to within an inch of the outer wall of the chest. Several examinations of the sputum failed to show any inflammatory products and no tubercular bacilli. For these reasons a tentative diagnosis of malignant invasion of the lung was made and the patient sent for radium treatment. It is reported that there is a marked improvement in her condition.

Some interesting features of the case are: First. The sinus empyema which was cured. Second. The rapid new growth of the tonsil beginning like a tonsillitis. Third. Rapid regrowth after extirpation. Fourth. At no time, glandular involvement and, Fifth. The disappearance so promptly with the use of radium. It is to be regretted that at the time of radium treatment, an X-ray of the chest was not taken. It is of interest that the patient's mother has been operated upon several times for carcinoma of the breast and since the last operation there has been no recurrence.

In conclusion: The growth involving the tonsil

was smooth, with mucosa intact, pinkish in color, and soft with no signs of ulceration until the last, and, with the repeated laboratory reports of inflammatory lymph-adenoid tissue make it highly probable that the growth was a lympho-sarcoma and the great value of radium in this particular case is shown.

THE TREATMENT OF BORDERLINE AND OBSCURE CASES.*

By FENTON B. TURCK, M.D.,

NEW YORK CITY.

INTRODUCTION.

THERE are no cases which give the physician greater concern than the so-called borderline cases. Their diagnosis is often obscure and their treatment extremely difficult. Of late it has been observed that disturbances in internal secretion form the basis of a large number of such cases. My experience, however, has been that by the time these patients come to a physician for treatment they have, in most instances, long since passed the acute and sub-acute stages. Their cases are, as a rule, well advanced and the mere administration of specific glandular extract does not entirely ameliorate the diseased condition.

If you run your car without oil for several days, it will need overhauling, and the mere addition of oil will not put your machine in running condition. Although lack of oil was the primary cause of the difficulty, it could no more be corrected by oil alone. Your car will need extensive repairs before you will be able to use it again. In the same way, if patients have been lacking for years sufficient pituitrin, for example, you cannot cure all their difficulties by the mere administration of extracts of this gland. Lack of the necessary amount of pituitrin has disturbed the health equilibrium of the patients. Their general metabolism has become defective and their resistance to disease has become lowered, and you will find them suffering not from one disturbance, but from a long chain of disturbances. In brief, as was the case with your machine, your patients also will need careful "overhauling."

On making a careful physical examination of your patients, you will find also either a focus or foci of *cell necrosis* caused by their general lowered resistance. These necrosed cells are continuously broken down by body ferments liberating split proteins which are highly toxic to the patients. In other words, you will find

that the patients are the victims of a vicious circle: Their lowered resistance causes disturbances in cell metabolism, or produces infection, or both, resulting in cell necrosis; enzymes acting on the necrosed cells liberate toxic split proteins which on entering their circulation tend to lower their resistance still further.

It is evident, therefore, that the *basic principle in the treatment of borderline and difficult cases must be to stop the cell necrosis as soon as possible*. Only by preventing the patients from being poisoned by their own products of necrosed cells can we hope to increase their resistance and bring them back to health.

Basis of Treatment: Before presenting my method of treatment of such cases, it will be necessary to briefly review some of my previously published work. It will be recalled that for the past twenty-five years I have claimed that the primary causative factors of disease are the poisonous split protein products which result from the breaking down of dead cells. In health, the building up (anabolism) and the breaking down (katabolism) of tissue cells, are in a state of equilibrium, and the broken down products of the comparatively small number of dead cells need give us little concern. In trauma, or any form of disease, however, when body cells die in countless numbers we have before us an entirely different condition. Proteolytic enzymes which are constantly present in the body tissues immediately proceed to break down these dead cells, liberating split protein products which are extremely toxic to the patient, lowering his resistance and playing havoc with his health.

Chemical observations made in my laboratory indicate that the toxic substance which results from the breaking down of necrosed cells belongs to the polypeptide group of split proteins. Further chemical studies, it is hoped, will throw more light on the nature of this substance.

This, however, we know, that the substance resulting from the splitting of dead cells is a specific toxin. Furthermore, the poisonous material resulting from the breaking down of necrosed human cells is poisonous only to the human being and not to the lower animals.

It will perhaps not be amiss in this connection to quote a simple laboratory experiment which proves the specific nature of this toxin.

A cat's heart is digested for about forty-eight hours in chloroform vapor to ensure sterility. Iso-autolysis takes place, as is shown by the indistinct staining of the nuclei. The digested product, which, according to chemical tests, is related to the polypeptides, is extremely toxic to the cat. A subcutaneous injection of 0.1 to 0.5 cc. is fatal to this animal. However, this product of digested cat's heart is toxic only to the cat. Dogs, rabbits, guinea-pigs and other animals are not poisoned by this split protein. In the same

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

way, the protein split products of dead cells of human tissue are toxic only to human beings, but not to other animals.

These findings have suggested the possibility of immunizing a man against his own toxic products of cell necrosis. Such investigations seemed eminently worth while, since, if successful, we would have at our command a specific substance against the poisonous split proteins which result from cell necrosis.

My observations have further shown that the toxic split products of autolyzed tissue *in vitro* are practically identical with the split products of autolyzed necrosed tissue *in vivo*. We are dealing with one and the same thing, and it appears not unlikely that if we were to inject properly digested human tissue into horses, that these animals would develop in their blood a specific antitoxic substance against human toxic split protein.

Judging from our findings, this is exactly what we have found to be the case, and after a large series of investigations the following procedure was finally evolved:

Human tissues are digested under sterile conditions up to a point approaching the polypeptide stage. Definite quantities of the digested products are then injected into a horse, at definite intervals, extending over a period of about six months. The horse serum then becomes rich in antibodies against toxic split proteins of human tissue cells. In other words, from all appearances, the immunized horse serum contains an antitoxic substance which is specific against the toxin liberated in the breaking down of necrosed human cells.

It is this antitoxic horse serum which I have been employing with phenomenal success in a long series of difficult and obscure cases. As the protocols will show, not infrequently, one single subcutaneous injection has put new life into a patient whose hope for recovery has been practically abandoned. In desperately acute conditions, intravenous injections have given the most brilliant results.

I do not claim that I have discovered the "Elixir of Life." Neither do I claim that every chemical and biological point in my treatment has been solved to everyone's satisfaction. We must remember that notwithstanding the extensive studies made in the field of toxin-antitoxin and immunity, there is still a great deal to learn about them. I do claim, however, that the serum of horses immunized against digested human tissue, when injected into patients, neutralizes the toxins of broken down dead cells and possesses the power to stop cell necrosis. This claim is based on numerous observations on animals, reported in other places,[†] and on the successful

results obtained in over five hundred obscure cases, of which ten are picked from the groups representing the various ailments recorded below. It is evident that just as soon as cell necrosis stops, the natural defenses of the body immediately set into play, and before long the patient has his full health returned to him.

Some of the cases reported are typically surgical. However, in these cases, on account of the weakness of the patient, resorting to surgery would have been extremely dangerous. In each case the employment of my treatment restored the patient to health.

It will be noted on glancing over the protocols that in some cases I employ small quantities of chloroform in conjunction with my immune horse serum. This is done because chloroform, having the ability to produce cell necrosis, naturally stimulates the body to the production of antibodies against cell necrosis. Thus by employing small quantities of chloroform we have a method of producing active immunity against cell necrosis and its poisonous products. The injection of immune horse serum produces passive immunity against cell necrosis, and in combination with the active immunity produced by chloroform we frequently get markedly favorable responses in advanced cases.

REPORT OF CASES.

Arterio-Sclerosis.

W. K.; male; age 67. Complaint: Flushes and fullness in head; pseudo angina with voice disturbance. High blood pressure, cramping in calves of legs. Back of neck stiff and painful. (Mother died at 37, arterio-sclerosis, with paralytic stroke.)

Anatomical and Functional Diagnosis.—High blood pressure, 200-210; contracted liver; high blood nitrogen; general sclerotic changes; kidney insufficiency; prostatitis.

Previous Treatment and Result.—All the drugs used to reduce pressure and insure elimination. Foreign protein injection; autogenous vaccines.

Present Treatment and Result.—Initial treatment of two $\frac{1}{4}$ cc. chloroform injections, followed next day by intravenous injection of 3 cc. serum. This was repeated within five days. These were followed by seven injections of serum over a period of five months.

Remarks and Results.—Blood pressure remains normal, 145. No increased nitrogen in blood. All fullness and flushes disappeared, with total absence of any pseudo-angina-kidney difficulties and prostatic symptoms disappeared. Attends to business and plays golf without fatigue.

[†] A bibliography of my work is given in "The Role of Cell Necrosis and Bacterial Invasion in Surgery," *Medical Record*, March 22, 1919.

Ulcer.

R. S.; female; age 29. Complaint: Acute pain pit of stomach.

Anatomical and Functional Diagnosis.—Typical ulcer of stomach. Chronic furunculosis.

Previous Treatment and Result.—Treated four years with medicine; foreign protein injections, vaccines and auto serum; yeast, internal secretions. No permanent result.

Present Treatment.—Nov. 27: Injection 5 cc. Antitoxin B, $\frac{1}{2}$ in arm and $\frac{1}{2}$ in leg. Dec. 6: Injection $\frac{1}{4}$ cc. chloroform in opposite arm. This was repeated till the patient was discharged.

Result and Remarks.—Dec. 9, the patient reported that she was much better. Jan. 29, the patient reported that all peptic ulcer symptoms had disappeared. Patient called and found on examination no evidence of ulcer. February: No return of symptoms. March 20: All examinations and findings show complete recovery. September: Patient discharged cured.

Ulcer.

F. K.; male; age 48. Complaint: Pain in stomach located about pyloric end of stomach.

Anatomical and Functional Diagnosis.—Ulcer of the pyloric end of stomach or first portion of the duodenum.

Previous Treatment and Result.—Treated for ulcer with a possible beginning of cancer of the stomach. After failure by regular physician resorted to osteopathic treatment. Negative results.

Present Treatment.—Made following injections: Jan. 4, 4 cc. antitoxin, $\frac{1}{4}$ cc. chloroform; Jan. 7, 5 cc. antitoxin, $\frac{1}{4}$ cc. chloroform; Jan. 16, 3 cc. antitoxin; Jan. 23, 2 cc. antitoxin; Jan. 30, 1 cc. antitoxin. Continued injections during February. March 1: Feels pain no longer and no ulcer symptoms. March 5: Injected 1 cc. antitoxin. March 14: Injected $1\frac{1}{2}$ cc. antitoxin. March 14: Feels well and strong.

Remarks and Results.—All symptoms of ulcer and other symptoms have disappeared. April 19: Patient is at work. September: Examinations show complete recovery.

Ulcer.

M. R. H.; female; age 27. Complaint: Pain in epigastrium; aggravated after meals and at night. Hyperchlorhydria. Anemia 70% Hgb. Gastric retention. General weakness; headaches, insomnia.

Anatomical and Functional Diagnosis.—Pyloric ulcer confirmed by X-ray.

Previous Treatment and Result.—Usual medical treatment over considerable period. Foreign protein and autogenous vaccines. Operation decided upon; patient referred for pre-operative serum treatment.

Present Treatment.—June 21: Injected 3 cc. serum intravenously, also $2\frac{1}{4}$ cc. chloroform sub-

cutaneously. June 26: Injected 3 cc. serum subcutaneously. July 3: Injected serum 3 cc. subcutaneously and $\frac{1}{4}$ cc. chloroform subcutaneously. July 10: Injected 3 cc. serum subcutaneously. July 20: Injected 3 cc. serum. August: All symptoms have disappeared; no operation was considered necessary. September: Repeating previous examinations and findings, show ulcer completely healed without any signs or symptoms of ulcer.

Results and Remarks.—As all other symptoms disappeared, patient discharged.

Status Lymphaticus.

C. F. E.; female; age 41. Complaint: Has enlarged glands, arthritis and rheumatic fever, throat troubles; irregular menstruation. Pains in joints; general weakness; has had tonsilitis since three years old. Always fainted; always difficult to find pulse. Waxlike complexion; anemia; always plump.

Anatomical and Functional Diagnosis.—Status lymphaticus.

Previous Treatment and Result.—Local and general sanitariums, springs, all forms of medication, including internal secretions, foreign protein and autogenous vaccines.

Present Treatment.—June 25: Injected 3 cc. serum; $\frac{1}{4}$ cc. chloroform. July 9: Injected 2 cc. serum; $\frac{1}{4}$ cc. chloroform. Aug. 11: Injected 3 cc. serum.

Results and Remarks.—Has resumed all her household and social duties after inactivity in these directions for a number of years.

Status Lymphaticus.

J. M.; female; age 23. Complaint: Sick since childhood. Headache and general weakness. Fainting spells, swollen ankles and legs, car sickness. Anemic; insomnia; tonsilitis; painful menstruation; palpitation and dyspnea; waxy, soft, rounded features.

Anatomical and Functional Diagnosis.—Status lymphaticus; glandular enlargement.

Previous Treatment and Result.—General, symptomatic and local. Nine injections salvarsan. No improvement.

Present Treatment.—July 11: Injected 2.6 cc. serum, $\frac{1}{4}$ cc. chloroform, each side of neck. July 14: Injected 1.5 cc. serum, $\frac{1}{4}$ cc. chloroform, on each side back. July 16: Injected chloroform $\frac{1}{4}$ cc. July 23: Injected serum 2 cc. in left lumbar region, two $\frac{1}{4}$ cc. chloroform in back. Aug. 5: Injected 2 cc. serum, right arm. Aug. 12: Injected 3 cc. serum in divided doses into the scalp along painful areas, also injected $\frac{1}{4}$ cc. chloroform in three different parts of the back of head. Aug. 20: Injected 3 cc. antitoxin. Sept. 2: Injected $\frac{1}{4}$ cc. antitoxin.

Remarks and Results.—Disappearance of all symptoms. Patient is entirely well.

Acute Infection.

Miss R.; female; age 24. Complaint: dyspnea, cyanosis; in comatose condition. Cardiac dilation with usual murmur.

Anatomical and Functional Diagnosis.—Ulcerative endocarditis with streptococci viridans in blood culture.

Previous Treatment and Result.—Usual medical treatment. Rapid progressive failure.

Present Treatment.—Aug. 8: Injected 1 cc. subcutaneously for initial dose; within one hour injected 4 cc. intravenously. Aug. 14: Injected 1 cc. subcutaneously, $\frac{1}{2}$ cc. intravenously. Aug. 20: Injected 3 cc. subcutaneously. Sept. 1: Injected 3 cc. subcutaneously. Sept. 10: Injected 3 cc. subcutaneously.

Results and Remarks.—Some reaction with urticaria. Progressive improvement, disappearance of all symptoms and all cardiac signs observed before the treatment. Bacterial examination showed disappearance of cocci from blood. No cure can be expected.

Considered Operative Case.

A. P.; female; age 46. Complaint: Chronic severe migraine headaches associated with intestinal stasis for many years, with increasing severity.

Anatomical and Functional Diagnosis.—Intestinal prolapse with "Lane's kink." "Dyspituitarism" hypothyroidism. General immunity deficiency.

Previous Treatment and Result.—General medical; endocrine therapy. Dental "foci" cleared; tonsils and throat rendered clear of "focal infection." Intestinal treatment by lavage and dietetics. Regular courses of autogenous vaccine therapy. Other foreign protein injections. No relief from the intense, continued suffering. Became a borderline case, as patient was willing to submit to operation for intestinal "kink" or any procedure that offered hope of some relief.

Present Treatment.—Feb. 23: Injected $\frac{1}{4}$ cc. chloroform. Feb. 24: Injected 3 cc. Serum H. Feb. 28: Injected $\frac{1}{4}$ cc. chloroform. March 1: Injected 3 cc. serum. March 19: Injected 3 cc. serum. April 14: Injected 2 cc. serum. June: Injected 2 cc. serum. August: Injected 3 cc. serum.

Results and Remarks.—Complete disappearance of all symptoms. Headaches and general depression and disability entirely disappeared. General health excellent. Recovery from intestinal stasis and all associated symptoms. The patient was discharged.

Arthritis-Neuritis Group.

A. B.; female; age 50. Complaint: General

neuritis; had it in mild form for ten years, but recently had to take to bed.

Anatomical and Functional Diagnosis.—Multiple neuritis, associated tissue auto-intoxication, with general weakness and inability to work. In last two years unable to attempt any work.

Previous Treatment and Result.—General medical treatment, X-ray "focal infection." Teeth and throat were "cleared up" by operative treatment without any general effect. Took a dry heat treatment, which seemed to increase the symptoms. Dietetic treatment for two years. Pain still continued. Has had seven to ten injections foreign protein without any benefits. Was diagnosed as case of auto-intoxication of gastrointestinal origin and operation offered as only relief. Tissue serum treatment was then advised.

Present Treatment.—Injections were given on the 8th, 14th, 18th, 21st and 24th of February. Gave three injections in May.

Results and Remarks.—Patient looks well and has no pain in joints. Can work without fatigue. Examination showed complete restoration. The patient was discharged cured.

Arthritis-Neuritis Group.

E. L.; female; age 44. Complaint: Pains in joints or arthritis.

Anatomical and Functional Diagnosis.—Chronic multiple arthritis with deposits shown by X-ray examination.

Previous Treatment and Results.—Foreign protein injections for three or four weeks. General medical and dietetic treatment failed. Resorted to osteopathic-homœopathic treatment, and symptoms got worse.

Present Treatment.—Jan. 23: Injected 2 cc. Serum Antitoxin H. Jan. 27: Injected $2\frac{1}{2}$ cc. Serum Antitoxin H. Continued treatment to March 20. In April the patient reported she was well. General examination in August showed no pathological condition or any symptoms.

Remarks and Results.—Can perform her duties without any hindrance or distress. Patient discharged cured in September.

Acute Infection.

L. T.; male; age 35. Complaint: Acute pain and swelling in entire arm.

Anatomical and Functional Diagnosis.—Acute progressive infection of arm (streptococcus).

Previous Treatment and Result.—Local antiseptics and usual hospital care. Operation delayed for fear of rapid general septicæmia.

Present Treatment.—After three injections of the antitoxin serum (H) there was no necessity for incision.

Remarks and Results.—Complete recovery.

Discussion of Cases.—It is evident from the reported cases that we have at our disposal a

serum which is specific against any form of cell necrosis. We have seen no serious untoward results and none have been reported. As I have stated above, I do not claim it to be an "Elixir of Life." There are, indeed, a number of problems connected with this serum that are yet to be solved. Some of these problems are now being investigated in our laboratory. But the remarkable results I have obtained with this antitoxic serum in difficult and obscure cases is shown in the protocols; these results justify, I believe, my enthusiasm for it.

Conclusion.—Horses immunized with properly prepared human autolyzed tissue develop in their blood antitoxic substances against homologous poisonous, broken-down proteins which result from cell necrosis. Such immune horse serum when injected subcutaneously in patients has the power to neutralize the toxins liberated from broken-down necrosed cells, and in the hands of the author has helped to clear up a number of obscure and difficult cases.

DISCUSSION.

DR. EDWARD LELAND KELLOGG, New York: We are much indebted to Dr. Turck for his paper. If we accept his conclusions, we must revise much of the teaching of the past and admit to our armamentarium in medicine and surgery a new principle, which, when thoroughly understood, will possess a singular appeal to the clinician and will explain many phenomena hitherto imperfectly understood.

The surgeon has taught many lessons to the internist which have been graciously received.

Shall we not extend the same courtesy to the medical man and examine with becoming deference this hypothesis, which is so convincingly presented, fortified as it is with almost unlimited laboratory experimentation and clinical application extending over a period of many years?

We are familiar with the many valuable contributions of the author and we must admit his peculiar fitness for the investigation he has undertaken.

A visit to his laboratory shows us hundreds of gross specimens, microscopic slides, and scholarly protocols, which convince us that Dr. Turck is not lacking in the material and the experience to justify his theories.

There is a broad hiatus between the work of the laboratory expert and the clinical surgeon which must be bridged if we are to properly take advantage of the experimental work that is being done. The language of the laboratory seems strange and difficult to our unaccustomed ears.

The terms colloids, polypeptids, autolysins, cytotoxins, agglutinins and precipitins are difficult to translate into the language of the consulting room, but, having done this, we are prepared to listen more understandingly.

Consideration will convince us that this paper is not one of academic interest only, but may possess the greatest clinical value to the practitioner.

The author tells us that shock and other manifestations arising from wounds, as well as secondary conditions, such as ulcer, pneumonia, acidosis, blood pressure changes, are produced by necrosed cellular tissue (polypeptids). Bacteria merely assist in the process. If we accept this statement, it helps us to understand many difficult problems, such as the shock and early death after extensive burns, the development of duodenal ulcer in burns that are not fatal, the exhaustion of heat prostration, the high temperature of sunstroke, the symptoms of anaphylaxis, the cause of post-operative temperature (when that occurs it is comforting to know that our patients are receiving an auto-inoculation against infection).

It tells us why heat combats shock, why the actual cautery helps lumbago, why nitrate of silver benefits ulcer, and many similar lessons.

Much that we have done empirically can now be justified scientifically.

Greatest of all, he gives us a rational basis for a new therapy.

That the absorption of autolyzed tissue cells may give rise to serious symptoms is easy to believe, but that a serum can be administered to protect the body against this effect seems revolutionary and gives us food for thought because of its far-reaching possibilities.

The internist and the surgeon have been puzzled and disappointed by the lack of uniformity in the results of vaccine therapy.

We have followed it through varying phases. Some of us have worked laboriously to obtain autogenous vaccines, while others have been satisfied with polyvalent stock vaccines.

Later, doubt has come to many of us concerning the specific effect of the vaccines, and it is suggested that the character of the vaccine makes no difference if we only obtain a reaction.

A recent paper on treatment of pneumonia by Landis and Brannen (*Journal A. M. A.*, April 12) is significant in this connection.

Under the heading "Foreign Protein Therapy," they offer the following conclusions:

"No improvement resulted unless a reaction occurred. The same benefit was derived from the antimeningococcic, antitetanic, antidiphtheric and antipneumococcic serum, provided a satisfactory general reaction resulted. In other words, there was no specific action of any type of serum, but the result was dependent entirely upon its protein content."

Dr. Turck recognizes that the antibodies of the human organism can be produced by sensitizing the body to a foreign protein, but he demonstrates that the body is already sensitized to its own autolyzed tissue cells and bases his therapy upon this fact.

During the past year I have been privileged to study Dr. Turck's work and to apply the treatment he recommends in hospital and private practice.

Others have testified in no uncertain terms to its benefit in pneumonia.

My own experience has been limited to the treatment of shock, as a preliminary to operation, intense burns, suppurative processes, auto-intoxication of intestinal origin, neuritis, lumbago, etc. With the exception of two cases of extensive burns that were promptly fatal, the results have appeared to be excellent.

Before the New York Academy of Medicine last winter I made this statement:

My impression is, wounds have healed more rapidly and infection has been more readily controlled. The freedom from injurious effects and the results of the author's carefully controlled experiments makes me feel justified in continuing the clinical experimentation.

It is important to be most conservative in endorsing so radical a departure from accepted methods, and I still feel that my experience is too limited to make my deductions conclusive.

May I ask Dr. Turck to enlighten us on the following points?

Is it not possible that you attribute to the germs a too unimportant rôle?

Will you explain why we find varying symptoms in varying types of infection and how shall we explain the transmission of a specific infection from one patient to another?

If the fibrile reaction we observe in infection is due to the formation of antibodies, how are we justified in this group of cases in giving serum?

Do you ever prefer active to the exclusion of passive immunization?

How do you explain the improvement which often follows the use of a vaccine made from bacterial products?

Will you explain more in detail your ideas of duodenal death in high intestinal obstruction?

DR. TURCK: In reply to Dr. Kellogg's question: The reason high loop obstruction was more rapidly fatal than low loop obstruction is that in the high loop the tissue autolysis of the wall of the obstructed gut is more rapid, owing to the richer supply of the ferments, trypsin, pepsin and erepsin, which accounts for the more rapid, severe and fatal symptoms in the high loops than was found in the low loops. The poison does not come from the lumen of the gut, but from the wall.

The reason why it has been so difficult to immunize against most of these micro-organisms is that effort has been made to immunize against

the bacteria and their ferments when in reality the determining direct active toxin is the digested tissue products of the host against which immunity must be established to be effective.

I have frequently noted that these bacterial filtrates and "anti" sera, while non-specific, do cause (by their enzymes) cell necrosis and autolysis in the injected animal. If these injections were repeated in small doses, I obtained antibodies against the animals' own tissue poisons, providing there was a reaction.

This reaction represents the death of tissue at the site of injection and the digestion or autolysis of the cells and escape of the products into the surrounding tissue. It represents simply an eschar from a cavity plus what additional ferments are obtained from the bacteria. I prefer chloroform producing active immunity which can be controlled as to the dosage and effects desired.

If autolyzed tissue is the specific toxin to the species, it should be able to produce a specific antibody. This I have been able to obtain by repeated injections of autolyzed human tissue into horses. At the end of six months a protective and curative serum was obtained.

When the injected bacterial filtrate creates a reaction, it represents the active antibody formation in the body. It is best to use a specific antitoxin which produces direct immunity. The recommendation I would make is that the specific antitoxin I have described is to be used in all cases of acute and chronic toxemia due to tissue autolysis. The effect is a prompt and lasting immunity.

Every surgical case, as pre-operative treatment, should be rendered immune to his own tissue autolysis. This can be accomplished by active and passive immunity by the methods described. Every surgical case showing post-operative symptoms with or without infection may be regarded with suspicion and should receive the immunizing injections here described.

Each cell is equipped with quick digestive ferments, but normally is prevented from self-digestion by the antibodies in the blood. When the blood supply is cut off the digestion of the tissues immediately follows, with the formation of "peptones" which are highly toxic to the organism. F. Raymond (1908) tied off the circulation of the hind legs of a rabbit and caused autolysis of the tissue. Re-establishing the circulation after some hours caused dyspnea, rapid pulse, drop in temperature and other shock symptoms.

The protocols that I presented show that wounds and injuries of various types owe their pathology to the interruption of the circulation which allows prompt autolysis of the injured tissue. These autolyzed products are both a local and general poison to the injured organism.

Medical Society of the State of New York

MEDICAL SOCIETY OF THE COUNTY OF ERIE.
ANNUAL MEETING, BUFFALO, N. Y., MONDAY, DECEMBER
15, 1919.

The Annual Meeting was called to order at 8.15 P.M. in the University of Buffalo, by the President, Dr. James E. King.

The minutes of the previous meeting and the minutes of the Council were read and approved as read.

Dr. Jacobs, Chairman of the Committee on Membership presented the following candidates for election: Drs. John A. Post, Christopher D'Amanda, Frederick W. Parsons, T. C. Burns, John P. Eisenberger, George P. Eddy, Henry L. Pech, Louis Gelb, Russell S. Kidder, John F. Finnegan, Harvey C. Schneider, W. Hurd Fisher, George C. Fisk, Margaret Douglas and Louise W. Beamis.

On motion duly seconded and carried they were declared elected.

President King delivered his annual report as President, after which a vote of thanks was tendered the retiring President for his splendid services during the past year and for his comprehensive presidential address.

The following officers were elected for 1920:

President, Earl P. Lothrop; First Vice-President, Arthur G. Bennett; Second Vice-President, De Witt H. Sherman; Secretary, Franklin C. Gram; Treasurer, Albert T. Lytle; Censors, John D. Bonnar, Archibald D. Carpenter, Francis E. Fronczak, Arthur G. Bennett and Frank A. Valente; Delegates to the State Society, Arthur G. Bennett, A. D. Carpenter, George F. Cott, F. Park Lewis, Julius Richter, Charles G. Stockton, Harry R. Trick and Grover W. Wende; Chairman, Committee on Legislation, H. W. Cowper; Chairman, Committee on Public Health, Charles A. Bentz; Chairman, Committee on Membership, Jesse N. Roe; Chairman, Committee on Economics, Thomas J. Walsh.

REGULAR MEETING, MONDAY, FEBRUARY 16, 1920.

The meeting was called to order at 8.30 P.M., in the University of Buffalo, by the President, Dr. E. P. Lothrop.

Secretary Gram read the minutes of the Annual Meeting and also the minutes of the Council held on December 29th and January 29th and February 16th, all which were duly approved.

Dr. Jesse N. Roe, Chairman Committee on Membership presented the following candidates for election: Drs. Isidor Adler, Henry H. Lewis, Francis A. Georger, Leon H. Smith, Walker E. Kiefer and M. Richard De Vita.

Drs. August Lascola and George L. Fischer were re-instated.

Dr. Woehnert offered a resolution by which the by-laws are to be amended to increase the annual dues to \$5.00 instead of \$3.00, in addition to which the per capita State assessment is also to be collected.

After the completion of the business session a film of over 200 feet entitled "Venereal Diseases, their Origin and Results," was shown. This film explained in animated diagrams the physiology and pathology of gonorrhea, chancroid and syphilis and the various stages of these diseases as well as their sequelæ.

Grover W. Wende, M.D., spoke on the present day Treatment of Syphilis, and James A. Gardner on Gonorrhea.

Walter S. Goodale, Superintendent of the Department of Hospitals and Dispensaries, took the place of Thomas B. Carpenter, M.D., who was unavoidably absent, and spoke briefly on "Municipal Aid in Fighting Venereal Diseases."

At the close of the meeting a good fellowship lunch was served in the college library.

Correspondence

STATE DEPARTMENT OF HEALTH

ALBANY.

February 24, 1920.

Dr. John Cowell Mac Evitt, Editor,
NEW YORK STATE JOURNAL OF MEDICINE.

MY DEAR DR. MAC EVITT:

In prosecuting our Venereal Disease Campaign as a part of the general scheme of public health work, we have felt that more pains should be taken to develop a constructive phase to our educational program. Posters are taking a very prominent part in this educational campaign. During the past these posters have usually been drawn to depict some diseased condition and a number of glaring and horrible posters are being used in the Venereal Disease Campaign. We believe the time opportune for the development and use of a poster which shall dwell upon the advantage of perfect health rather than the disadvantage of imperfect health. Therefore we are inviting artists to compete in preparing for us drawings that will emphasize this point of view.

Will you kindly circulate the following notice among those whom you think will be interested in serving the public in this way?

HEALTHY PARENTS HEAD HAPPY FAMILIES.

The Bureau of Venereal Diseases of the New York State Department of Health offers a prize of \$100 to the person who best interprets the above expression in a colored drawing that can be reproduced as a poster in public health work.

Drawings may be made any size but must not be smaller than 12 x 18 inches.

Drawings may be signed by artist. Signatures will be covered before seen by judges. Judges will be announced later by Dr. Hermann M. Biggs, Commissioner of Health.

Winner will be chosen from among those whose drawings are received at the New York State Department of Health, Albany, N. Y., before 5 P. M., May 1, 1920.

Drawings will be returned if artist will submit postage. It may be desirable to purchase for use elsewhere certain of those not winning the prize.

The bureau reserves the right to reject all drawings if in the minds of the judging committee none satisfactorily meets the requirements.

Posters in use by this bureau at present picture the horrors following in the wake of the venereal diseases and it is felt that for the sake of constructive work a poster depicting full robust health should be employed.

Appreciating your co-operation, I am,

Very truly yours,

JOS. S. LAWRENCE,
Chief, Bureau of Venereal Diseases.

Women's Medical Society

The Fourteenth Annual Meeting of the Women's Medical Society of New York State, will be held at the Hotel McAlpin, New York City, March 22, 1920. There is a very interesting program both morning and afternoon; Dr. Winifred Cullis of London, Eng., will be one of the speakers. At luncheon the State Society will be the guest of the Women's Medical Association of New York City. Dr. S. Josephine Baker of the New York City Department of Health, will be the toast-mistress at the banquet in the evening.

All women physicians are cordially invited to attend.

Book Reviews

THE OXFORD MEDICINE. Edited by HENRY A. CHRISTIAN and SIR JAMES MACKENZIE. New York. Oxford University Press, American Branch. Vol. 1, Parts 1-4. Royal 8vo. 5 Vols. \$52.50.

The Oxford Medicine offers a departure from past systems of medicine inasmuch as both in its preliminary and final form it provides material so arranged that the subscriber is first of all provided with a series of fasciculi that contain the various articles as they are received from individual contributors, which on completion will be exchanged for loose leaf volumes in durable binding. These are to be supplemented quarterly in order to keep the material well up to date. Published in this manner it is by no means a simple matter for the reviewer to offer a comprehensive critique, for the arrangement of the individual articles is not consecutive.

The introductory articles are as follows:

The Future of Medicine, by Sir James MacKenzie, following Dr. Christian's introduction of Present Day Medicine and preceding Dr. W. B. Johnston on the Heritage of Modern Medicine, after which follow articles of a scientific nature. E. V. McCollum contributes a chapter on the part played in diet by food substances of unknown chemical nature. Henry Sewall writes on Climate in Relation to Health and Disease, and Albion W. Hewlitt supplies a chapter on Pathological Physiology and its Relation to Internal Medicine. Guy Hinsdale writes on Hydrotherapy. It is unnecessary to detail the following chapters as their titles may be found in the publishers' announcements. One may confidently state, however, that the character of the articles already submitted is as comprehensive as one could expect and represents the most authoritative pronouncements of modern medicine. Until more of the purely clinical chapters appear, it will be hard to say what appeal the work will make to the average practitioner, as the chapters on what we now regard as the fundamentals of our conception of what constitutes diseases and those parts dealing with pathological physiology and the reactions of the body in its normal and pathologic biochemistry are somewhat in advance of the average reader's point of view. There can be no question of the immense value of the work to the advanced student and to the reader who is searching for completeness. It is doubtless essential that any work of this type should present a complete record of medical progress and it is unfair to make any adverse comment until the complete work has been published. Indeed, no criticism could be adverse except as it might voice one's individual criticism in regard to some special feature. Praise must so far outweigh adverse comment that the latter can in no wise detract from the immense value of the work.

HENRY G. WEBSTER.

TOXINES ET ANTITOXINES. Par M. NICOLLE, E. CESARI, C. JOUAN. de l'Institut Pasteur. Masson Et Cie. Editeurs. Paris. 1919. Prix 5 francs net.

Any publication emanating from the Pasteur Institute immediately attracts attention and commands respect, and this is especially so in this instance as the writers are investigators who have done a great and valuable work in the extremely important field of study of toxins and antitoxines.

This volume does not purport to be a review of the work of other writers on the subject but rather a presentation of original researches which cover a considerable space of time.

Little attention is given to theories and hypotheses, and the greater part of the text is devoted to descriptions of original animal experiments.

In a small compass is a vast amount of material invaluable to any one interested in the fascinating study of immunity.

W. H. DONNELLY.

M. LOEPER. LEÇONS DE PATHOLOGIE DIGESTIVE. Quatrième Serie. Masson Et Cie, Editeurs, Paris. 1919. Prix 10 francs.

This is the fourth series or edition of Loeper's writings on the pathology of the digestive tract, the third having appeared in 1914. As is the case with practically all European publications appearing since the war, a great part of the subject matter deals with lessons learned in military practice.

In reviewing articles or treatises by French writers one is struck by the great stress laid by them on the emotional, or as they term it, "commotionai" etiology of many conditions, especially those of the gastrointestinal tract. This prompts the question as to whether the European, and especially the French soldier's nervous system is not very much more susceptible than that of the English or American fighting man.

A chapter on gas intoxications in the genesis of dyspepsias throws light on a comparatively recent causative factor of disease.

Professor Loeper is already well known in medical literature and his views must be given careful consideration.

W. H. DONNELLY.

MME. ATHANASSIO-BENISTY. LES LESIONS DES NERFS. Traitement et Restauration. Masson Et Cie Editeurs. Libraires De L'Academie De Medecine 120, Boulevard Saint-Germain, Paris, VI. 1919. 7 francs net.

The end of the great war has made possible the publication of the results of study of great numbers of cases, and of lessons learned therefrom in all divisions of medical and surgical practice.

Of all the injuries of warfare those of peripheral nerves, with resultant atrophy and loss of function of muscles and limbs, are perhaps the most distressing as well as the most tedious and trying to treat.

The writer seems to have a thorough and deep knowledge of both the theoretical and the practical sides of this subject.

There are chapters on diagnosis and prognosis of nerve injuries, followed by others on both the surgical and the physiotherapeutic treatment of such injuries.

The last and longest chapter deals with orthopedic appliances and is especially well illustrated with cuts.

W. H. DONNELLY.

EXPERIMENTAL PHARMACOLOGY. By HUGH MCGUIGAN, Ph.D., M.D. Octavo of 251 pages, illustrated with 56 engravings and 7 colored plates. Philadelphia and New York, Lea & Febiger, 1919. Cloth, \$2.75.

This little book covers much more ground and gives more detail than can be actually dealt with, in a satisfactory way, in a medical-curriculum laboratory course. But, as the author points out in its preface, "it is neither possible nor necessary that each student or group of students should perform each separate experiment. However, every student should endeavor to see the work of all the others and be able to discuss these" (their) "results, since a knowledge of the action of drugs is more important for the majority than the development of technical skill. On the other hand, it should be emphasized that the performance of as many experiments as possible is the best means of gaining a knowledge of drug action." (P. 3.)

The Introduction is essentially a digest, consisting of definitions, general principles, the general technic, general anesthesia and resuscitation methods. Chapter I deals with the modes of drug administration, general operative technic and general recording methods, Chapter II with the local actions of drugs, and the remaining twenty-one chapters with detailed effects of drugs on particular tissues, organs and tracts of the animal body and with anesthesia, antiseptics, synergism and antagonism.

The letterpress is excellent, though there are a few typographical errors, and the illustrations are clearly re-

produced and very helpful. The directions for experimental procedure are concise and explicit and the explanatory portions of the text are, for the most part, clear and precise; but here and there one meets with a vague or even misleading statement, such as one of the following: "All sensory nerves connect, directly or indirectly, with all motor nerves. Hence smell, sight, thought of food, contact with food or drugs, movements of jaw may cause a flow of saliva." (P. 72.) "The motor areas of the brain are located along the anterior surface of the fissure of Rolando." (P. 93.)

As a whole this book, though undoubtedly useful to students pursuing a course of instruction in experimental pharmacology can scarcely be recommended as a satisfactory *guide* for such a course, chiefly because of the apparent viewpoint, as laid down in its preface, from which it has been written. "This manual," the author states, "attempts to follow and illustrate the most important part of the text-book work;" thus giving the impression that he considers "text-book work" of primary and laboratory work of secondary interest, or value. Throughout the book the viewpoint thus indicated is, in general, maintained. Text-book assertions and generalizations seem to be given precedence, in position and importance, over actual laboratory *findings*; thus encouraging the student to endeavor to obtain experimental results in agreement with preconceptions, or with assertions accepted on authority, rather than to watch for any results that may come to light, and thereby engendering a habit of mere confirmation rather than inciting to one of investigation. This criticism is offered with reference to the book as a whole; not to any, much less to every, particular part of it. As in the case of some other books of its class, the reviewer ventures to suggest that the author has attempted to include too much within its confines.

J. C. C.

A MANUAL OF HYGIENE AND SANITATION. By SENECA EGBERT, A.M., M.D., Seventh Edition, enlarged and thoroughly revised. 12mo. of 554 pages, illustrated with 160 engravings and 5 plates. Philadelphia and New York, Lea & Febiger, 1919. Cloth, \$3.00.

Dr. Egbert has given a thorough revision to his valuable manual on hygiene which has deservedly reached its seventh edition. The book contains a mine of authoritative information in clear, simple, and, wherever possible, non-technical language. However, hygiene is a subject so vast in extent that it is absolutely impossible to fully cover it within the scope of one volume, and books of this character necessarily suffer from fragmentary and incomplete treatment of many important topics. To give an adequate review of industrial hygiene in sixteen pages, or of military or naval hygiene in forty pages, is necessarily a difficult if not an impossible feat.

It is to be hoped that in the next edition Dr. Egbert will not omit the discussion of standardization of disinfectants and of the most recent methods of air examination and other hygienic tests recently elaborated by the several committees of the American Public Health Association.

G. M. P.

THE SURGICAL CLINICS OF CHICAGO. Volume III, Number 6 (December, 1919). Octavo of 216 pages, 63 illustrations. Philadelphia and London, W. B. Saunders Company, 1919. Published Bi-Monthly. Price per year: Paper, \$10; Cloth, \$14.

The December number of the Surgical Clinics of Chicago contains contributions from twenty-two surgeons.

The reader will be pleased to find the number devoted entirely to problems of civil surgery. There is a good variety of cases presented. There is one contribution which is of special value, an article by Drs. J. W.

Woolston and W. B. White entitled, "Report of One Thousand Cases operated on for Tubal Infection."

Again the well-known names among the writers speak for the quality of the material presented. The surgical public is always attentive to what they have to say.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number 2 (The New York Number, September, 1919). Octavo of 270 pages, 35 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Published bi-monthly. Price per year: Paper, \$10; cloth, \$14.

This number, which is the second of the third volume, bears the date of September, 1919, evidently having been delayed in publication by the grave labor troubles which for a time almost disrupted the printing industry.

It is another issue by the clinicians of New York City and covers a wide field of internal medicine, the hospitals represented being the Presbyterian, the Mount Sinai, the Post-Graduate, the Vanderbilt Clinic, the Lenox Hill and the Beth Israel.

The subjects taken up are of such varied nature and interest and the clinicians of such established standing that it is almost impracticable to select any particular ones for especial mention.

This series is now well-known to students and practitioners and it is pleasing to find that a very high standard has been maintained from the beginning up to the present.

W. H. DONNELLY.

CHILD WELFARE IN KENTUCKY. An Inquiry by the National Child Labor Committee for the Kentucky Child Labor Association and the State Board of Health. Under the Direction of EDWARD N. CLOPPER, Ph.D. Published by the National Child Labor Committee, New York, 1919. Price, \$1.25.

This is the report of an enquiry by the National Child Labor Committee for the Kentucky Child Labor Association and the State Board of Health, under the direction of Edward N. Clopper, Ph.D.

There are sections on Health, Schools, Recreation, Rural Life, Child Labor, Juvenile Courts, and Law and Administration. It is quite evident that a vast amount of work was involved in this enquiry and the gathering together of the data obtained.

Work of this kind when reproduced in print is of great value to investigators along the same lines, more especially when, as is the case in this instance, the various subdivisions of the plan are elaborated by specialists trained to the task. The findings, criticisms and recommendations may readily be applied, with modifications, to almost any state or community in the country.

W. H. DONNELLY.

Deaths

GEORGE H. BALLERAY, M.D., Paterson, N. J., died February 10, 1920.

WILLIAM C. BENJAMIN, M.D., Hornell, died January 9, 1920.

JOSE M. FERRER, M.D., New York City, died February 23, 1920.

GEORGE H. McMICHAEL, M.D., Buffalo, died January 18, 1920.

FREDERICK J. SCHOENENBERGER, M.D., New York City, died February 20, 1920.

GIACOMO A. SENIGAGLIA, M.D., Nyack, died February 24, 1920.

JOHN VAN DER POEL, M.D., New York City, died February 22, 1920.

VER NOOY W. WEED, M.D., Brooklyn, died February 26, 1920.

WILLIAM H. WILSON, M.D., Johnson City, died about January 23, 1920.

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No. 4

ORIGINAL ARTICLES

Annual Oration.*

By JOHN H. FINLEY, M.A., LL.D., L.H.D.,

PRESIDENT OF THE UNIVERSITY OF THE STATE OF
NEW YORK.

IF I could have had a part in determining what books should be regarded as canonical, I should have voted for the inclusion of the book known as "Ecclesiasticus," or as "The Wisdom of the Son of Sirach." At any rate I follow the example of St. Augustine in making frequent use of it, and I would imitate St. Jerome in urging that it be read for the "instruction of the people," even if it may not be followed as an authority in theological dogma. It contains among many essays of wisdom about things physical and things spiritual, a remarkable oration—a very brief sententious one—on "Disease and the Doctor," than which a better for such an occasion as this has not (so far as I know) been written in all the ages since it was translated by a person in Egypt in 132 B.C.; though it is the sort of oration that either one of those two great physicians who have gone from the sight of us on earth since your last annual meeting might have composed: Dr. Abraham Jacobi and Dr. William Osler, so worthy are they to be included among our inspired writers and prophets.

The channel of our Western speech is generally so shallow that it is only such men as these, the depth of whose lives reached down to the ancient Hebrew or Greek wisdoms, who have been able to write such orations in our day. (I

must include with these the layman, Grover Cleveland, who made the wonderful address at the celebration of the centennial of your society in 1906, the address culminating in the sentence "for you have to do with the temples of the Holy Ghost.") I lament with you their passing, not only as doctors but as great philosophers and noble men.

It was on a railroad station platform by the side of the lake which one of these, a fearless friend of truth, Dr. Abraham Jacobi, loved, that I saw one day last summer a pine box bearing his name and bringing his body back to the city. I thought of the verse in the burial service, "We brought nothing into the world and it is certain that we can take nothing out of it"—but I have thought, too, of how much he left in this world for all his bringing nothing into it (lengthened life, health and wealth), and leaving it with only his burial clothes and an outer vestment which the trees had made for him.

And Osler—I cannot assume to speak of his contribution to your science and to the physical well-being of the world, but I must, a layman, applaud the spirit of *Aequanimitas*, which he so notably exhibited, and which the world as sorely needs as it needs bodily healing. That spirit of his has been well defined and summed up in its daily application by one of your brothers in the following every-day speech:

"Keep cool; avoid extremes and excesses; don't despair; don't whine and complain; avoid the anxiety-neurosis; repose is better than male hysteria; 'the ego disturbs the cosmos'; the gods approve the depth and not the tumult of the

*Delivered at the 114th Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

soul; never lose your self-possession; do not be a petty 'have not.' Envy is the sign of inferiority. The great of old, the Homers, Shakespeares, Newtons, Beethovens, Pasteurs, have not been grabbers but *givers* of the most priceless things we have."

But I go back to the ancient oration (more than two thousand years old), the fragments of the original of which were found but a few years ago by a great Hebrew scholar who later became a citizen of New York, Dr. Schechter. I quote it in its entirety as my skeleton, though I should be willing to make it my whole oratorical corpus.

The first part has to do with health habits.

"My son, prove thy soul in thy life, and see what is evil for it, and give not that unto it. For all things are not profitable for all men, neither hath every soul pleasure in everything. Be not insatiable in any luxury, and be not greedy in the things that thou eatest. For in multitude of meats there shall be disease, and surfeiting shall come nigh unto colic. Because of surfeiting many have perished; but he that taketh heed shall prolong his life."

The second part turns toward the doctor, toward whom all must come or soon or late, whatever their health habits.

"Honor a physician according to thy need of him with the honors due unto him; for verily the Lord hath created him. For from the Most High cometh healing; and from the king he shall receive a gift. The skill of the physician shall lift up his head; and in the sight of great men he shall be admired. The Lord created medicines out of the earth; and a prudent man will have no disgust at them. Was not water made sweet with wood, that the virtue thereof might be known? And he gave men skill, that they might be glorified in his marvelous works. With them doth he heal a man, and taketh away his pain. With these will the apothecary make a confection; and his works shall not be brought to an end; and from him is peace upon the face of the earth."

(O that we had a doctor to bring peace upon the face of the earth now.)

The third part gives advice to the patient.

"My son, in thy sickness be not negligent; but pray unto the Lord, and He shall heal thee. Put away wrong doing, and order thine hands aright, and cleanse thy heart from all manner of sin. Give a sweet savour, and a memorial of fine flour; and make fat thine offering, as one that is not. Then give place to the physician, for verily the Lord hath created him; and let him not go from thee, for thou hast need of him. There is a time when in their very hands is the issue for good. For they also shall beseech the Lord, that He may prosper them in giving relief and in healing for the maintenance of life. He that

sinneth before his Maker, let him fall into the hands of the physician."

I.

"He that taketh heed shall prolong life."

It is not too much to say, I think, that the most comprehensive program for the application of the first advice of this ancient wisdom—a wisdom which had earlier illustration in the Mosaic law—is to be found in the conception of the law of the State of New York which looks to the formation of health habits on the part of every child in the State eight years of age or older, not only in eating but in drinking and in caring for one's body—as the house of earthly happiness, as "the temple of the Holy Ghost."

Here is what this law contemplates under the interpretation and application by the Board of Regents of The University of the State of New York.

"First: That physical training as provided by these bills (Chapters 566 and 567 of the Laws of 1916) be construed as covering: (1) individual health examination and personal health instruction (medical inspection); (2) instruction concerning the care of the body and concerning the important facts of hygiene (recitations in hygiene); and (3) physical exercise as a health habit, including gymnastics, elementary marching, and organized, supervised play, recreation and athletics.

"Second: (1) That the class teacher assist in the individual health examination and personal health instruction of pupils through (a) rapid inspection of all pupils at the beginning of each day's session (after some experience the teacher will be able to note signs of abnormal health conditions at the expense of no more than a few seconds of time); (b) reference to the proper authority of all children showing need of personal examination and advice; (c) appropriate exercise and recreational provision for all pupils reported by the medical inspector as organically unfitted for regular physical exercise; and (d) the following up of all health advice that can be followed up. This assistance from the regular class teacher is not to take the place of the work of the medical inspector or school nurse.

"(2) That plans for the individual health examination, personal hygienic instruction and the following up of advice be further organized by the division of medical inspection of the State Department of Education, emphasizing: (a) examination of all pupils each year, (b) careful personal advice to each child examined, (c) parental co-operation, (d) effective following up of advice, (e) recognition of severe organic weakness disqualifying children for vigorous exercise, (f) more frequent examinations for children with serious organic weaknesses, (g) co-operation with the organized medical and

dental professions and with local or general organized health agencies, (h) the examination of all pupils before admission to school for the first time, and (i) the presentation of a health record from the school previously attended by a pupil on transferring to a new school.

"Third: (1) That class instruction concerning the care of the body and the important facts of hygiene be given by the class teacher, except in schools in which special teachers are appointed; (2) that at least two periods of ten or fifteen minutes each be devoted weekly to this instruction during each and every term by these acts; (3) that this instruction be co-ordinated with or that it include the instruction already given in physiology and hygiene; (4) that appropriate tests and examinations be given the pupil covering this instruction and that the progress of the pupil from grade to grade depend upon the quality of the work accomplished; and (5) that the present syllabus on physiology be revised and include such subjects as the following:

"a. General

1. Hygiene of the teacher.
2. Sanitation of the schoolroom and playground.
3. Hygiene of the janitor.
4. The use of pupils as 'health officers' or 'sanitary inspectors.'

b. Syllabus for elementary grades, the central topics being cleanliness, posture (care of the bones and joints), cheerfulness (care of the emotions), care of the skin, care of the digestion, care of the muscles, care of the eyes, care of the ears, nose and throat, care of the teeth, care of the heart and circulation, care of the lungs, care of the nervous system.

c. Syllabus for secondary schools, the central topics being the laws of health, the causes of poor health and disease, the carriers of disease, the contributory causes of poor health, the defenses of health, personal hygiene, domestic hygiene and community hygiene."

The cord that binds this whole course of education from first to last is *habit*. The great motive from beginning to end is to translate health axioms and rules into actual habits. The child must learn this hygiene by *doing*. *Health achievement* will bring school credits and honors far more surely than learning health precepts by rote. The kindergartner will be drilled into habits appropriate at his age. The senior in high school will be shown the significance of certain habits that come only with the passing of childhood. Our efforts are directed to the training of the will, rather than the storing of the memory. Along this line, the whole subject matter of the syllabus is to be graded and arranged.

This program is partly in operation, partly in contemplation only, for the reason that we have

not as yet health inspectors and teachers of sufficient numbers and qualification to carry forward the program in every school of the State. And the law without the teacher and the co-operating physician (medical inspector) is as impotent to give longer life to children in manhood and womanhood as the staff of Gehazi (the servant of the prophet Elisha), was to bring back to life the child of the Shunammite woman. You remember how the mother besought the prophet to come in his own person, how he first sent Gehazi to lay his staff upon the face of the child, how he returned saying that there was neither voice nor hearing and how the prophet himself finally went to where the child was; put his mouth upon the child's mouth, his eyes upon the child's eyes, his hands upon the child's hands till life came back. So we need in every school the prophet who will so touch the mouth and eyes and hands of the children that they shall have happier and longer lives. And this is not to be accomplished by such medical inspection as I heard of in one school where the local medical inspector examined eighty children in sixty minutes, using the same tongue depressor for all. His name was Gehazi.

What we need are Elishas who will give attention to each child. I hope that the schools may have such teachers and so take their part in a great health program in co-operation with the State Health Department, the Industrial Commission and all other child health agencies in the State interested in the child from the pre-natal period to maturity. This is the best sort of health assurance, one which this Society can support.

I summarize this part of my oration in a translation of a Greek hymn which I found a few days ago in one of your periodicals (sent to it, I think, by Dr. Osler). In the slightly modernized and democratized form which I have ventured to give it, I think it should have a place on the walls of every home where there is a child.

ARIPHRON'S HYMN TO HEALTH

O holiest Health, all other good excelling,
May I be ever blest
With thy kind favor, and for all the rest
Of life, I pray thee ne'er desert my dwelling:
' For if God shall riches give,
Or a name that long shall live,
Or children smiling round the board
With a mother who's adored,
Or any other Joys
Which the all-bounteous One employs
To raise the hearts of men
Consoling them for long laborious pain;
All their chief brightness owe, kind Health,
to you;
You are the Graces' spring;
To you all blessings cling;
For no man's blest when you are not in view.

II.

"Honor a physician."

The second advice of this ancient wisdom is to "Honor a physician" . . . "for verily," it is added, "the Lord hath created him." And there is no injunction that I should more gladly follow if I but had the eloquence to do it; not according to my own need, but the State's need of him and especially the children's need. I have long had it in memory that Homer in his *Iliad* began the praise of doctors and I sought out a few days ago the quotation, which in the best translation runs:

"A doctor is to be preferred with physic ornaments before a multitude," or as another has put it, "he's worth a host of us."

I have always envied the doctor of medicine (the doctor whom the Lord hath created), for he has the satisfaction of knowing that he has saved or prolonged life while we who have to do with ideas only, or largely, never can know certainly whether we have helped or harmed. I keep vivid in my memory a scene in the narrow hill-side streets of Nazareth, the second day after its occupation, when the women and children gathered around my companion, the British medical officer, a Scotchman, who had for years before been the physician at the head of the hospital in Christ's home town (as a Denver paper called it) kissing his hand that had healed them, and crying, some of them for joy at seeing him again.

Plato tells of two classes of doctors in ancient Greece: first, those whom he calls "slave-doctors," who never talk to their patients (since they are slaves) nor let their patients talk to them (for the same reason); who do not diagnose, yet prescribe, and operate as if they had accurate knowledge; and second, doctors of freemen, who go into the nature of the disease, and even, as Plato satirically says, educate their patients before curing them. I suspect from what I have been reading that even in this free country we have doctors and surgeons who practise much as did the slave-doctors of Plato's period, who make a nefarious and tyrannical trade of a noblest profession, demeaning both terms in their practices. God speed any man or society who will drive such unholy, greedy merchants out of the temple.

There is another translation of the opening sentence of the second part of Ben Sirach's oration: instead of "honor a physician according to thy need of him" it reads "acquaint thyself with a physician before thou have need of him." And I cannot resist the temptation to follow this interpretation in supporting and emphasizing the need not only of a rigid examination on the part

of the State in order that the people may be acquainted with the competent physicians before they have need of them, but also of annual registration in order that no impostor may pursue his practice. If anyone opposes such registration, the fate should be his which a cynical Greek version of one of the sentences in this oration evokes:

"Let the man who rebels against his true benefactor [that is, the State who is trying to protect him] be punished through the tender mercies of a quack."

III.

"In sickness be not negligent."

The last counsel is to the patient: "in sickness be not negligent." Pray to the Lord, put away wrong-doing, cleanse thy heart, make a fat offering. But then "give place to the physician."

We are mysterious amphibians, partaking of the physical and the spiritual as Sir Thomas Browne has said in his *Religio Medici*: "There is surely a piece of divinity in us," but there is something which even the divinity cannot heal. "I can cure vices by physick when they remain incurable by divinity," said Sir Thomas, "and they shall obey my pills when they contemn their precepts."

When I last spoke to this honorable society, I referred to certain psychic bacteria which I had encountered in my experience, *micrococcus egotisticus*, *spirillum tardum* and several others to which still others have been added during and since the war (such as the *bacillus diabolus*). Their eviction from the system is essential often to cure. (Naaman the leper had the *micrococcus egotisticus* in his system when, having been told that he would be cured of leprosy if he were to wash in the River Jordan, he said in his local pride, "Are not Abana and Pharpar, rivers of Damascus, better than all the waters of Israel?") But there are also the omnipresent, pathogenic physical microbes which only the skill of the physician created of God can conquer, the broken bowls which have seemed beyond mending but which have by the surgeon's craft been patched to hold again the divine essence or the "undying fire."

So have we need to follow the ancient counsel to "give place to the physician," for there is a time when in his hands "is the issue for good."

It is my highest function as President of The University of the State of New York to sign the licenses which admit physicians to practice in this State. It is a solemn responsibility as well as a highest honor to open the door to all who enter this profession. I have found myself repeating often that caution of Mr. Cleveland's, "Tread lightly, gentlemen, for you have to do with the temples of the Holy Ghost." Some-

times I have spoken Professor George Herbert Palmer's words about loyalty to this exalted brotherhood. Sometimes I have wished, for each as for myself, that each might have for his daily use a skull of some unselfish heroic one who has died for others' sake, made into porringers.

One for his food and one for drink that he
Touching in hunger or in thirst their rims
Might learn to do his task unselfishly
Fronting the ghastly face of Death—nor flinch.

But with whatever word or prayer I admonish those who pass invisibly before me into this profession, I administer to all the ancient oath, known to you all, and hear their inaudible assent.

"You do solemnly swear, each man, by whatever he holds most sacred:

That you will be loyal to the profession of medicine, and just and generous to its members.

That you will lead your life and practice your art in uprightness and honor.

That in whatever house you shall enter it shall be for the good of the sick to the utmost of your power, you holding yourself aloof from wrong, from corruption and from the tempting of others to vice.

That you will exercise your art solely for the cure of your patients and will give no drug, perform no operation of a criminal purpose, even if solicited, far less suggest it.

That whatsoever you shall see or hear of the lives of men which is not fitting to be spoken you will keep inviolably secret.

These things you do promise and in proportion as you are faithful to this your oath may happiness and good repute be ever yours, the opposite if you shall be foresworn."

I had once upon a time to undergo an operation on my foot, and not wishing to take an anesthetic, I asked my doctor—that brave, fine, splendid, modest, public-spirited Dr. John Huddleston of New York, who died a few years ago—to let me have some interesting book to read during the operation. He gave me Robert Louis Stevenson's "Letters" (just published). I have at other times found Stevenson absorbingly interesting, fascinating. But there are times in most men's lives, "or soon or late," when the art of the doctor is seen to be the supreme art, transcending all other arts. And it is my debt to that art and my admiration for its high practitioners which brings me here to-night.

May you of this Society keep this art beyond the corruption of selfish commerce and above the reach of ignorant, untrained men; keep it an art that may be worthily practised in "temples of the Holy Ghost."

PRESIDENT'S ADDRESS.*

By GRANT C. MADILL, M.D.,

OGDENSBURG, N. Y.

THE responsibilities of the office, with which this Society has been pleased to honor me, have always been great and its duties many, but the year which has just passed has been full of peculiar difficulties and questions of great importance. Never has a President of this Society needed or been blessed with wiser counselors.

The signing of the Armistice by the warring nations put an end to the slaughter of men by weapons of war and the world rejoiced that peace had come. As the echoes of war died away, new questions and complex problems arose, and although sixteen months have elapsed since firing ceased, the world is still laboring to bring order out of social chaos. The problems to be solved involve social, industrial, economic and governmental conditions.

The cause of this social unrest has received the attention of sociologists, psychologists, financiers, and statesmen. In fact, it has been studied from every possible angle without, as yet, definite results. During the period of war, mankind reverted to primitive instincts and the individual willingly sacrificed wealth and life itself for the benefit of the herd-society,—realizing, in the words of Kipling that "the strength of the pack is the wolf and the strength of the wolf is the pack." We are forced to realize that, with all the centuries of civilization, man still remains a biological element and regresses to the methods of the savage when the welfare of the State demands it.

When the necessity of herding on a scale embracing the entire nation was ended, the individual became conscious of self again and soon began to drift to pre-war selfish initiative. We now have the individual grouping in classes and class arraigned against class in an economical and political struggle, with greater intensity of feeling than ever existed before the war. The greatest class struggle is between organized labor, seeking by the exercise of economic and political power, to obtain control over the conditions of its life, and capital, organized to resist labor's demands. The demands of the classes are accompanied by threats which, if carried out, would bring, not only inconvenience but actual suffering to their fellow-men.

To cure the present social maladies, we have an infinite number of remedies recommended by those interested in sociology, by students of political science and by a large number of self-appointed apostles of up-lift, 'visionary without vision, aspiring to obtain, by a short cut, the millennium. As a result of the various efforts to

* Read at the 114th Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

bring about order and contentment from the maze of social unrest, we have leaders among the different groups, who hope, by revolutionary means, to bring about what should come by a process of evolution, which is the natural, conservative and dependable means of biological progress. The world will continue in a state of confusion until there is full realization that society cannot, by act of legislation, reach the sublime state hoped for by the uplifter.

Those aiming to discover the cause of social upheaval are so many and work is being prosecuted along so many diverging lines that there is little prospect of an agreement. In our own country of Democracy it would seem that the fundamental principles upon which our government was founded would be lost sight of entirely. The founders of the American Republic made individualism the foundation of our institutions. Socialism aspires to make the individual directly subservient to the welfare of the State, which is in conflict with the principles and the spirit of liberty, as proclaimed in the Declaration of Independence of the thirteen United States of America. For nearly a century and a half our country has stood for equal opportunity for all, and has welcomed to its shores all those from foreign lands desiring to become citizens, jealously guarding and encouraging their efforts to succeed and enjoy lives of contentment.

To those with an abnormal amount of sympathy and sentiment, the law of "struggle for existence and survival of the fittest" appears crude and barbarous. To the American-born there is, however, an added zest to life in the challenge expressed in "struggle for existence" and the Government stands as umpire in securing fair play, protecting the weak and preventing infringement on the rights of others.

We, as physicians, are concerned in the numerous social problems in which the State is interested, and in addition, have our own special problems, depending on the close relation of medical advances with general industrial and social questions. We are passing through an era in which many traditions, beliefs and customs are being put in the scrap heap or the melting pot and the practice of medicine cannot stand still.

There is a demand on the part of certain classes, particularly the heads of labor organizations, to socialize medicine, even without the consent of the medical profession. Health Insurance is opposed almost unanimously by the Medical Society of the State of New York and also by the allied professions, nursing, dentistry and pharmacy. This Society, at a special meeting in November, 1919, placed itself on record as opposed to Compulsory Health Insurance, by adopting the report of a Special Committee appointed to study the question.

Physicians must realize that, as citizens, they are interested in the welfare of society and must

not shirk the responsibility of citizenship by becoming so absorbed and self-centered in their professional work, that they forget their duties as citizens.

In matters of Public Health the medical profession has always taken a keen interest, and although Compulsory Health Insurance was rejected by the House of Delegates, the following resolution was adopted:—"Owing to the paucity of accurate and unimpeachable data collected by means of an unbiased investigation, your Committee recommends that the Legislature of 1920 be requested to appropriate a sufficient sum of money for the use of the Health Department, and such other departments in association with it, as it requires, for the purpose of making a survey of the State of New York to determine the amount and character of illness in its economical relation to the commonwealth." And further: "If additional legislation is to be enacted, it should provide for a greater development of existing agencies for preventive medicine, together with the extension on a large scale of the present county and municipal functions for both preventive and remedial medicine, and it should make further provision for the inauguration of more widely extended utilization of the present institutional clinical facilities for the diagnosis and treatment of disease, in order to facilitate the access of the entire population of the State to modern methods in the practice of medicine."

This means that the Medical Society of the State of New York prefers the gradual evolution of State Medicine to any form of Health Insurance.

The progress of State and Federal medicine has been so gradual that the public and even physicians do not appreciate the vast amount of medical practice that is being done by physicians in this service.

Approximately forty thousand insane patients are in institutions under control of the State of New York and cared for by physicians whose salaries are paid by the State. A large number of public hospitals for the treatment of tuberculosis are scattered over the State, the physicians being paid by the counties and the State.

The Department of the State Board of Health has on its staff a large number of physicians whose duties are the supervision of the sanitation and the public health of the State.

To bring to your attention the extent of the activities of the State Board of Health, I mention the different divisions in which the work of the Department is so successfully carried out.

- Division of Sanitary Engineering.
- Division of Laboratories and Research.
- Division of Vital Statistics.
- Division of Communicable Diseases.
- Division of Child Hygiene.
- Division of Public Health Education.

Division of Tuberculosis.
Division of Public Health Nursing.
Bureau of Venereal Disease.

Recently the Public Health Council has recommended, in addition, the establishment of a Division of Industrial Welfare. The State has also established an Institute for the Study of Malignant Disease and, in this, was the pioneer State to initiate research for the cause and treatment of cancer. Counties and cities have also established laboratories which aid the physician in making diagnosis and give the community the benefit of modern laboratory investigation.

The State in furnishing funds to carry on the numerous activities of its various Divisions, with experienced heads, shows the deep interest it takes in the health and welfare of its citizens. This also shows the broad scope of the work of the Department of Health of the State of New York, not only in sanitation but diagnosis and treatment of diseases that menace the public health.

In addition to the activities of the State Board of Health, there is a "United States Public Health Service" which is the principal Federal Health agency. For the performance of certain health functions, there are other Federal departments, including the Bureau of Chemistry, the Department of Agriculture, the Children's Bureau and Bureau of Labor, Bureau of Census, Division of Vital Statistics, Department of the Interior, the Interdepartmental Social Hygiene Board and others. The Public Health Service has the authority to investigate human disease and control infectious contagious diseases. In the conduct of this work Congress has appropriated \$8,338,470 for the fiscal year ending June 30, 1920, to the Public Health Service. Of this amount, \$3,000,000 is to be used for public health work.

It is pointed out by Dr. B. S. Warren, Assistant Surgeon General, that there is an overlapping of functions and a duplication of work of various executive departments authorized by Congress and the Public Health Service. It would seem also that there should be greater co-ordination of the Federal, State and local health activities.

Undoubtedly this will not result until there is one administrative head with a cabinet officer in charge of the Department of Health.

To expand in our State by developing the existing agencies for preventive and remedial medicine means a step in advance towards State Medicine. That State Medicine will eventually come, requires no great imagination to predict. It will, I believe, come gradually by a process of evolution, and can be developed in such a manner that the medical profession will not be deprived of its traditional prerogatives. It must be so adjusted that the spirit of individualism and initiative in medicine are not clouded.

Remuneration for services must be on a scale sufficiently large to enable the physician to live well, educate his children and enable him to retire at sixty-five to live on a pension. Grades can be established and promotions, based on efficiency and successfully passing examinations as in the Army and Navy, would offer incentive to industry and initiative.

A fixed salary for a medical man would be a blessing, particularly to those practising medicine with a profound interest in the scientific aspect of medicine. The medical man is notoriously a poor business man and an annual budget would in many ways be a relief. Medical men in research laboratories, full time professors in colleges, officers in the Medical Corps of the Army and Navy, if imbued with the spirit of science, lose no initiative by having an annual salary and the moral support of an established institution. John Hunter, who was more interested in the science than in the commercial interest of the practice of surgery, expressed his scorn for the commercial in medicine by saying to his friend, "Well, Lynn, I must go and earn this damned guinea, or I shall be sure to want it to-morrow."

There will always be a demand for the private physician, and at present interest is centered in providing for industrial workers scientific medical and surgical treatment and nursing at a cost within their means or, if necessary, free.

The one great objection to any system of State Medicine is the danger of the Department of Health becoming the victim of political patronage. The State of New York is fortunate at present in having at the head of its Health Department men of ability and integrity who are interested solely in the welfare of the public health.

The Medical Society of the State of New York should keep the public informed on all matters pertaining to health legislation, and there should be close co-operation of the medical profession of the State with the Department of Health.

A most serious situation exists at present throughout some rural sections of the State due to a lack of physicians. Many villages and hamlets that have had a practising physician for years are now without a doctor. The establishment of hospitals in the small cities and convenient transportation by motor ambulance as well as the ability of the physician to cover a much larger area by automobile, relieves to some extent, the lack of physicians in rural communities. The areas without physicians, however, are gradually increasing, and it will be necessary for the State to provide for proper medical care and nursing of residents unable to have it otherwise. During epidemics and the period of deep snow in our climate, there is actual suffering. The country doctor of the type so beautifully portrayed in Dr. MacLure in "A General Practitioner," by Dr. MacLaren is fast disappearing and no young doctor is taking his place.

It will be necessary for hospitals to expand in order to meet the demand for institutional care, and it may be that the State will be called upon to aid financially in enlarging hospitals already existing and the construction of new buildings. When a survey of the State, to determine the amount of illness in its economic relation to the commonwealth, is completed, a basis will be established upon which an estimate of the cost to the State can be computed. The cost undoubtedly will be great, but the conservation of health and prolongation of life is the most important function of the State and the benefit economically considered amounts to many millions.

In planning an expansion of State Medicine, many objectionable features will have to be eliminated. It would be a mistake to inaugurate any system that would tend to lessen the self-respect and independence of the individual.

It is my opinion that the American citizen of the industrial class does not want charity. He and his family are entitled to medical care and nursing when sick, but should be expected to pay for such services, even when furnished by the State, so far as he is able. It will be necessary to avoid philanthropy, when not justly deserving, and also to avoid prolongation of sickness, because the State is bearing the expense. We have an example of the tendency to prolong convalescence and to feign disability to a degree approaching malingering, in the functioning of the Workmen's Compensation Law. Every patient, excepting those in circumstances actually needing free care, should pay.

Successfully to establish and put in action a system of limited State medicine, will require deep study—economically, scientifically and from the point of view of the physician.

Medicine to-day is not attracting students in sufficient numbers to supply the demands of private practice, hospitals, State and National institutions, the Army, Navy and Public Health Service. The State Hospitals for the Insane are working with staffs much under normal and municipal hospitals find difficulty in obtaining a sufficient number of internes. There are seven hundred and thirty vacancies in the Medical Corps of the Army, four hundred and ninety-two vacancies in the Medical Corps of the regular Navy and the Public Health Service is in need of a large number of officers.

The reason for the small number of young men entering the Medical Schools is due probably, first, to the length of time required to obtain a medical education, and, secondly, to the comparatively small remuneration of the physician, considering the cost of preparation. It is my belief that the cost necessarily excludes from the Medical School the poor boy, who may have talent for, and is ambitious to study medicine.

It is no longer possible for the boy without

financial means to work and earn the necessary money. The standard of medical education should not be lowered. Either the State or the Universities must make provision for the education of students with a desire and with mental qualifications adapted to the study of scientific medicine. Considering the length of time required, seven years, and the cost, \$10,000, there is little to attract a young man to the practice of medicine in the financial returns, estimated as averaging \$3,907.

Medicine is but one of many departments of human endeavor that feels the need of additions to its ranks.

While I feel certain that income is by no means the determining factor which induces a young man to study medicine, it is essential that the reward be sufficient to maintain a dignified position in society. I beg to quote from an address on Geology made before The American Association for the Advancement of Science by Dr. F. L. Ransome, which expresses not only the economical condition pertaining to the personnel of geology but of all other departments of science, including medicine. "It is all very well to insist that the scientific man does not work for money and should not trouble his thoughts with such an unworthy consideration. Nevertheless, if he is to do the best of which he is capable, he must be lifted above the grind of poverty, be able to give his children those educational advantages that he can so well appreciate, have opportunity for mental cultivation and feel his social position to be such that he can mingle without humiliation with his intellectual peers. If it is destructive to the scientific spirit to set up material gain as an object, it may be equally blighting to force the attention continually downward to the problem of meager existence. The normal scientific man usually has other human beings dependent upon him, and the traditional spirit of self-sacrifice and the indifference to material reward that are commonly attributed to the true investigator may, when these members of his family are considered, come very close to selfishness. If salary or income is reasonably adequate, most men who are animated by the spirit of science, will find additional reward in their work itself if this is felt to be worthy of their best efforts."

The practice of medicine in the future will undoubtedly be carried on by what are known as Group Clinics, either diagnostic alone, or diagnostic and remedial. Specialists will become associated in groups for the purpose of giving patients the benefit of thorough and complete clinical, laboratory and X-ray investigation, and if the clinic be organized for diagnosis only, the patient will be returned to the attending physician with the diagnosis and advice of experts. The cost to the patient of such an examination will necessarily be expensive and only those able to pay can afford such a complete examination,

The State has already made a step forward towards this type of practice by employing specialists as diagnostic experts in contagious diseases, tuberculosis, muscle and joint deformities following infantile paralysis and other special diseases. Undoubtedly as State Medicine developments and Health Centers are established, a staff of specialists will be employed to provide group study for those unable to afford the cost of examination by private groups.

Group practice will be of inestimable value to all classes, rich and poor alike. It means co-operation of those who have given deep study to special diseases, and the patient with an obscure malady will have the benefit of the advice and judgment of the entire group. This system of practice is not an experiment as we have several conspicuous examples of its success throughout the country.

We, who have practised medicine during the latter part of the nineteenth century and the early part of the twentieth, feel that our generation has lived through the most remarkable advances in medicine and surgery of all time. New discoveries and advances will continue. While we deplore the disappearance of the old-fashioned family doctor, with his intimate relationship to the patient and his ever present sympathy, and in return the loyalty of the patient, future generations will have other standards, and there will be many changes. Each generation, however, will feel that—

“Always old songs have a mellow tune.”

Section Officers Elected March 24, 1920

Medicine.—Nelson G. Russell, Chairman, Buffalo; Herman O. Mosenthal, Secretary, New York.

Surgery.—Ledra Heazlit, Chairman, Auburn; George W. Cottis, Secretary, Jamestown.

Obstetrics and Gynecology.—John O. Polak, Chairman, Brooklyn; William T. Getman, Buffalo.

Neurology and Psychiatry.—Michael Osnato, Chairman, New York; S. Philip Goodhart, Secretary, New York.

Eye, Ear, Nose and Throat.—Albert C. Snell, Chairman, Rochester; Irving W. Voorhees, Secretary, New York City.

Pediatrics.—Godfrey R. Pisek, Chairman, New York; Arthur W. Benson, Secretary, Troy.

Public Health, Hygiene and Sanitation.—Paul B. Brooks, Chairman, Albany; Arthur D. Jaques, Secretary, Lynbrook.

To All Physicians Who Served the Federal Government During the War:

An Association of Medical Veterans of the World War was organized at Atlantic City in June, 1919, at the time of the meeting of the American Medical Association, and a constitution and by-laws adopted. About 2,800 physicians have already joined and all others who are eligible are invited to join the society.

The Constitution states that “the dominant purpose of this Association shall be patriotic service. The objects of this Association shall be: To prepare and preserve historical data concerning the medical history of the war; to cement the bonds of friendship formed in the service; to perpetuate the memory of our medical comrades who made the supreme sacrifice in this war; to provide opportunity for social intercourse and mutual improvement among its members; to do all in our power to make effective in civil life the medical lessons of the war, both for the betterment of the public health and in order that preparedness of the medical profession for possible war may be assured.”

The organization of the society provides for State and local organizations wherever the members desire it, and in some States, such as Wisconsin, organization has already been effected.

It is desired by the national association that those who are already members meet together in larger and smaller groups, at the first convenient opportunity, and effect a local organization with a chairman and secretary, and also at the next meeting of the State Medical Society that a place be provided on the program for the Medical Veterans.

The organization of the society is based on democratic principles, and it is hoped that the members who have already joined will take the initiative and organize their own State and local societies.

The national organization will assist by furnishing application blanks and copies of the Constitution and By-Laws, and, if desired, stationery.

The first thing to be done after the organization of a State society is effected is to elect a Councillor to the General Council of the organization, to represent the State society at the next annual meeting of the Veterans at New Orleans on the first day of the meeting of the American Medical Association, April 26, 1920.

A badge or button for members of the society is being made and will soon be ready for distribution.

Yours very sincerely,

F. A. RUSSELL, Secretary
Medical Veterans of the World War.

Medical Society of the State of New York

ANNUAL REPORT

1919

REPORT OF THE PRESIDENT.

To the House of Delegates:

It has been my great privilege as President of the Medical Society of the State of New York to visit, during the past year, the meetings with two exceptions, of all the District Branches; also many of the meetings of the County Societies. Interesting scientific programmes were presented, the attendance was good and the papers appreciated and discussed.

In addition to the scientific features of the meetings, the affairs of the State organization were discussed in a manner showing deep interest in the welfare of the profession.

I am convinced that the District Branch plays an important rôle in the scientific work of the Society, due principally to the fact that the members congregate from the adjoining counties as neighbors and feel greater freedom in discussing the papers presented.

While I was unable to attend the annual meeting of the Second District Branch, I am informed that, in spite of the efforts of the officers and the presentation of an attractive programme, the attendance was small. For some unexplained reason, members of this Branch do not show great interest in the meetings.

I am satisfied that the County organizations are, with few exceptions, successful in administering the executive affairs of the constituent bodies and also in the study of scientific medicine, as is shown by the programmes presented at the meetings.

I find, however, that no systematic effort is made by the County organizations to increase the membership, and it is my opinion that the State organization should carry on a propaganda to urge all eligible physicians to join their respective County Society.

The attitude of the medical profession throughout the State and the action taken at the

special meeting of the House of Delegates on the question of Compulsory Health Insurance, show how essential is solidarity, if we hope to succeed in influencing the public in matters pertaining to public health. I would, therefore, urge that the State Organization conduct a campaign to enlist the membership of every legally qualified physician in the State. In making this appeal for increasing the membership, I realize that I am but repeating what every preceding President has recommended, but the present seems to demand an unusual effort.

During the past year there has been a large number of deaths among our members, the total number being 66. The present membership is 8,727, being an increase of 369 during the year.

The sudden death of Dr. Abraham Jacobi on July 10th removed one of the most prominent physicians of our country. Dr. Jacobi served as President of the Medical Society of the State of New York during the year 1882. He was a most learned physician and the medical world has lost in his death one of its most brilliant lights.

In the death of Dr. Floyd M. Crandall, who died November 19th, this Society has lost a faithful and loyal member. Dr. Crandall had served for three years as Secretary of this organization and his death left vacant this office. In addition to performing the duties of Secretary, he had been acting Editor of the JOURNAL for several months. He will be greatly missed.

The most important event of the Society during the year was the duty performed by the Special Committee appointed by my predecessor, Dr. Halsted, to study Compulsory Health Insurance with special reference to its relationship to the medical profession. Dr. Harvey R. Gaylord was made Chairman of this committee, and, as President, I wish to express my gratitude for the thorough and painstaking work done by this committee. The subject was studied from every angle and in an unbiased manner. The members

of the committee, with two exceptions, attended quite regularly and numerous sessions were held.

The unanimous adoption of the majority report showed the unanimity of feeling towards Compulsory Health Insurance. The medical profession, after its deliberate study of Compulsory Health Insurance, can not be accused by the proponents of bills of the type of the Davenport-Donahue bill, of uninformed prejudice.

Of the constructive recommendations of this committee, the most important are the fifth and sixth. The fifth: "Owing to the paucity of accurate and unimpeachable data collected by means of an unbiased investigation, your Committee recommends that the Legislature of 1920 be requested to appropriate a sufficient sum of money for the use of the Health Department, and such other departments in association with it, as it requires, for the purpose of making a survey of the State of New York to determine the amount and character of illness in its economical relation to the commonwealth." The Sixth: "If additional legislation is to be enacted, it should provide for a greater development of existing agencies for preventive medicine, together with the extension on a large scale of the present county and municipal functions for both preventive and remedial medicine, and it should make further provision for the inauguration of more widely extended utilization of the present institutional clinical facilities for the diagnosis and treatment of disease, in order to facilitate the access of the entire population of the State to modern methods in the practice of medicine." These recommendations and their adoption by the House of Delegates show that the medical profession of the State of New York is willing and anxious to co-operate with the State in the betterment of public health.

I wish also to express my appreciation of the excellent work of the various standing committees. The reports of these committees, submitted for your consideration, show careful study and the recommendations reflect conclusions based on sound judgment. The Committee on Scientific Work has arranged an interesting and well-balanced programme, and the Committee on Arrangements has devoted much time to perfecting the plans for the meeting, which can not fail to be a success.

One of the purposes of the Medical Society of the State of New York, as expressed in Article 1 of the Constitution is "to enlighten and direct public opinion in regard to the great problems of State medicine." It is my opinion that greater effort should be made to acquaint the public with the important problems of State medicine which exist today. There is, I believe, a demand on the part of the profession of the State, both within and without this Society, for more effectual means to inform the public on legislation per-

taining to public health. The public is vitally interested in health questions.

During the past year, organizations were formed outside of the State Society to carry on a propaganda in opposition to Compulsory Health Insurance. In order to oppose Compulsory Health Insurance, the medical profession in many instances sought, by political means, to influence the public in electing the members of the Legislature. It is my belief that the activities of the State Society on questions pertaining to public health legislation, so far as the relationship of the profession to the public is concerned, should end with the dissemination of information on the subject in question and an expression of an opinion as to what, in the judgment of the profession, is best for the public. With the public thoroughly informed on questions of public health legislation, the medical profession will be in a position to exert greater influence in the Legislature for wholesome and efficient health measures, without resorting to methods savoring of political tactics and asking for class legislation.

While the enlightenment of the public on medicinal matters is one of the fundamental purposes of this Society, no special means have been employed to perform this function. I would therefore suggest that there be appointed a committee whose duty shall be to disseminate, through the officers of the County Societies, information pertaining to public health matters.

It is my opinion that the JOURNAL can be made a more active and useful medium for the dissemination of information and propaganda in enlightening the public and keeping the medical profession closely in touch with all matters pertaining to professional activities.

EXECUTIVE SECRETARY.

Extension of the activities of the Society demands increased labor on the part of the officers of the various standing and special committees. The chairmen of the various committees have always willingly and efficiently performed their duties at the expense of much time and actual cost. The members of this Society are mostly engaged in the active practice of their profession and it is difficult for them, at all times, to give proper attention to the duties of their offices. It does not seem just to increase the work that has already been thrown upon these committees.

That the Society may expand its activities, co-ordinate the functions of the various standing committees and increase its usefulness, both to the public and the profession of the State, I recommend the employment of an Executive Secretary, at a salary sufficient to secure a capable and efficient officer. At the special meeting of the House of Delegates held in Albany, November 22, 1919, it was moved, seconded and carried, "that the whole question relative to the

establishment of a legislative bureau of information and the report of the special committee be postponed until the next annual meeting of the House of Delegates." This question will, therefore, be acted upon at the coming annual meeting. Two reports were presented at the annual meeting held in Syracuse in May, 1919. One was by the special committee on the Establishment of a Bureau of Legislative Information, the Chairman of which is Dr. George W. Kosmak; the other by the Chairman of the Committee on Legislation, Dr. James F. Rooney. Both reports recommended the employment of a salaried officer as director. An Executive Secretary of the Society could, in my opinion, perform the duties as clerk or as director of the Bureau, if such a Bureau be established. The duties and salary of the Executive Secretary should be determined by a special committee appointed for this purpose.

FINANCES.

The present income of the Society is not sufficient to enable it to carry on any increase in its activities. The small surplus in the hands of the Treasurer and the imperative need of extra outlay will soon bring about an exhausted treasury. The added cost of every department of effort and the expense incurred by the appointment of special committees makes necessary additional income. To economize by curtailing any of the present work would, in my judgment, be bad policy. The work of the Society should be expanded and not contracted. To broaden the scope of the efforts of the organization, it is obvious that there must be an increase in income.

I would, therefore, recommend that Article 7, Section 2 of the Constitution be amended so as to read "The State annual per capita assessment shall be \$5, and shall be collected by the county treasurers at the same time and as part of the county dues, and shall be remitted to the State Treasurer by the treasurer of each county society on or before the first day of June of each year."

If the \$2 increase in annual dues be added and an aggressive campaign for new members be successfully prosecuted, the corresponding increase in income from these sources will be sufficient for the employment of an Executive Secretary and for carrying out the suggested broadening of activities. It is unfortunate that the Society should be compelled to increase its dues at a time when all costs are advancing, but it would be a more serious misfortune to permit the work of the Society and its publications to be crippled.

The Society gives to its members a JOURNAL, an annual directory and provides legal defense in suits for malpractice in addition to the benefits, both professional and social, of membership in the State organization, for the small sum of \$3.

As an expression of appreciation of membership in this, the representative organization of the profession of the State of New York, and to

carry out the suggested increase in its activities, which will be of invaluable benefit to the profession, members ought to willingly and cheerfully favor the recommended increase in dues.

At the annual meeting of the Society in 1917, the following resolution was introduced, seconded and carried, "that the Committee of the Whole recommend to the House of Delegates that a special Committee be appointed to make a revised draft of the present Workmen's Compensation Law, which revised draft shall be submitted at the next annual meeting of the House of Delegates of the Medical Society of the State of New York, or a special meeting called for the purpose thereof." A committee was appointed by Dr. Lambert, President. There is no record of a report of this committee at any annual or special meeting. I believe that another committee should be appointed to consider this resolution.

In closing, I wish to express my appreciation of the great honor you have conferred upon me in making me President of the Medical Society of the State of New York, and also to thank the officers and members for the assistance given and the universal courtesy shown.

Respectfully submitted,

GRANT C. MADILL, *President.*

March 1, 1920.

REPORT OF THE SECRETARY.

To the House of Delegates:

In compliance with Section 3, Chapter VI, of the By-Laws, the Secretary submits the following report for the year ending December 31, 1919:

Membership, December 31, 1918...	8,184	
New members, 1919.....	332	
Reinstated members, 1919.....	261	
		8,777
Deaths	109	
Resignations	30	
Expelled	0	
		139
		8,638
Dropped for non-payment of dues, December 31, 1919.....	340	
		8,298
Elected after October 1, 1919, and credited to 1920.....	273	
Membership, January 1, 1920.....	8,571	
" " " 1919.....	8,268	
" " " 1918.....	8,339	
" " " 1917.....	8,287	
" " " 1916.....	7,940	
" " " 1915.....	7,239	

On January 21, 1907, the membership of the State Society was 5,857. Today there is an increase of 2,714. During these thirteen years there have been 1,328 deaths, 571 resignations, and 20 expulsions, a total of 1,919. Each year a certain number are dropped for non-payment of dues, but before the close of the next year about two-thirds of these pay their dues and are reinstated. The loss from this source from 1907 to date has only been 2,031, an average of 156 a year.

During these twelve years, 6,813 new members have been admitted.

The Honor List of Counties whose membership for 1919 is fully paid up is as follows: Chautauqua, Greene, Rockland, Schoharie, Seneca, Washington, Wayne, Yates.

These figures indicate a considerable increase in the membership of the Society during the past year; in fact, a greater increase than in any year of the past four. This is, undoubtedly, due to demobilization, a fact which suggests that the present is a time eminently fitted for adding still further to the Society's membership. I want to emphasize the importance and necessity of a large membership, both from the point of view of usefulness and of revenue. The Society should broaden and extend. Its activities must increase; its influence must grow. To do so it must have a large membership. Every physician in the State should enroll. In this way only can the State Society become a power for good and an instrument to strengthen and improve the medical profession. There are 14,446 practising physicians in New York State. Of this number only 8,738, or a little over sixty per cent, are members of the State Society. This proportion is far too small. A special effort should be made to enlist most of these non-members and all who are of the best type. Many of the 5,708 non-members need only the proper urging to join. The method of approach is all-important; a letter will not do, the appeal must be personal. I, therefore, urge upon the Society the necessity of acting upon this measure, and suggest that at the coming annual meeting the House of Delegates appoint a special committee whose function it shall be to devise ways and means of increasing the membership. To be effective such a committee must be in sympathy and in close touch with the several County Societies, as it is only by increased membership in the County Societies that there can be an increase of membership in the State Society.

I wish to call the attention of the delegates to the amendment to Section 1, Article 3, of the Constitution, which will come up for action at the March meeting. It provides for the annual election of a Speaker and Vice-Speaker to the House of Delegates; in other words, it would give to this legislative body a competent and per-

manent presiding officer. While this would be an innovation, it would be neither radical nor without precedent, as a similar plan has been tried with great success in the House of Delegates of the American Medical Association. It would be progressive and practical; it would save time and tend towards greater harmony and more constructive legislation. A body of the size and importance of the House of Delegates should have as a presiding officer one skilled in parliamentary law.

I also wish to call the attention of the delegates to an amendment to Article IV of the Constitution, which will be presented at the March meeting. This changes the apportionment of the delegates. At present each County Society is entitled to elect to the House of Delegates as many delegates as there are State Assembly districts in that County. The amendment provides that the delegates shall be apportioned among the constituent Societies in proportion to their actual membership, except that each constituent Society shall be entitled to elect at least one delegate. The amendment is based upon actual membership and will afford a more just and equitable representation. It is wiser and fairer and deserves the support of every delegate.

A new Section has been added to the scientific work of the Society. For the first time in many years, there will be a Section on Neurology and Psychiatry. This was established at the suggestion of Dr. Thomas P. Salmon. We have tried to present an interesting, complete and modern program and it is, I think, one of the best. The Section must be permanent; it deserves the support and encouragement of the Society. I, therefore, especially urge that this first meeting be well attended.

The expenses incident upon maintaining the office of the Secretary have increased very considerably during the year. The office rent has been doubled, printing, paper, and wages have increased. I feel that it is necessary to point out these facts inasmuch as the income of the Society has remained stationary.

My predecessor, the late Dr. Crandall, was taken ill in the late fall, and after a very short illness died on November 19th. He had served the Society faithfully and with honor for three years. His death was a great loss. I wish to express my deep appreciation to the Society for the confidence and support which it gave me when I was unexpectedly called upon last November to assume the duties of Secretary.

EDWARD LIVINGSTON HUNT,
Secretary.

March 1, 1920.

Dr. REPORT OF THE TREASURER—Continued. Cr.

DIRECTORY ACCOUNT.*

<i>Expenditures.</i>		<i>Income.</i>	
1918 Directory:		1919 Directory:	
Expense:		Expense:	
Directories on hand, Jan- uary 1, 1919.....	\$200.00	Stationery and Printing..	\$225.50
Advertising unpaid, Jan- uary 1, 1919.....	150.00	Commission	510.45
	<u>\$350.00</u>	County Clerk's Fees.....	4.50
		Salaries	2,631.25
		Postage	5.15
			<u>\$3,376.85</u>
Expense:			\$4,349.57
Postage	\$566.43	<i>Income.</i>	
Commission	6.00	Sales, 1917 Directory	\$7.50
Delivery	38.79	Advertising, 1917 Directory..	185.00
Binding, Labels, etc.....	11.50		<u>\$192.50</u>
	<u>622.72</u>	Sales, 1918 Directory.....	\$301.50
		Advertising, 1918 Directory..	255.00
			<u>\$556.50</u>
			749.00

* This statement includes preliminary expenses, but no receipts for the 1919 Directory on account of non-delivery until after close of the year.

JOURNAL ACCOUNT, YEAR ENDED DECEMBER 31, 1919.

<i>Income.</i>		<i>Expenditures.</i>	
Advertising	\$8,949.48	Publication	\$11,005.31
Subscriptions and Sales.....	250.98	Commission	1,905.73
	<u>\$9,200.46</u>	Salaries	1,446.88
		Discount	241.70
Cost of Journal	5,660.18	Postage	125.00
	<u>\$14,860.64</u>	Sundry Expense	136.02
			<u>\$14,860.64</u>

BALANCE SHEET, DECEMBER 31, 1919.

<i>Assets.</i>		<i>Liabilities.</i>	
Current Assets:		Accounts Payable	
Cash in Bank.....	\$10,344.49	Committee on Medical Research..	465.47
Petty Cash	3.62	Accounts Receivable.....	497.01
	<u>\$10,348.11</u>	Advance Payments Received:	
Inventory of Directory Catalogs.	250.00	Annual Dues, 1920....	\$1,104.00
Accounts Receivable	1,224.16	Directory, 1919 Sales..	770.50
	<u>\$11,822.27</u>	Directory, 1919 Adver- tising	102.00
Trust Fund:		Committee on Arrange- ments, 1920 Meeting..	1,302.50
Union Dime Savings Institution, Lucien Howe	\$538.10		<u>3,279.00</u>
Union Dime Savings Institution, Merritt H. Cash.....	415.32	Lucien Howe Prize Fund..	\$2,288.10
Title Guarantee Trust Mortgage Certificates	2,000.00	Merritt H. Cash Prize Fund	1,165.32
Liberty Bonds	500.00		<u>3,453.42</u>
	<u>3,453.42</u>	Surplus:	8,556.08
Fixed Assets:		Balance, January 1, 1919.....	\$9,153.81
Office Furniture and Fixtures.....	470.10	Excess of Expenditures for 1919.	1,889.10
Annual Meeting, 1920.....	75.00		<u>7,264.71</u>
	<u>\$15,820.79</u>	Balance, December 31, 1919.....	7,264.71
			<u>\$15,820.79</u>

Respectfully submitted, BAKER, VAWTER & WOLF, Certified Public Accountants.

INCOME AND EXPENDITURES, YEAR ENDING DECEMBER 31, 1919.

<i>Income.</i>		<i>Expenditures.</i>	
Annual Dues, Arrears	\$123.00	Secretary	486.11
Annual Dues, 1917.....	81.00	Salaries—General	3,027.60
Annual Dues, 1918.....	762.00	Annual Meeting, 1919.....	1,322.32
Annual Dues, 1919.....	24,960.00	Agreement Expense	17.50
Clerical Work	197.97	Committee on Medical Economics..	4.00
Committee on Arrangements, 1919.	297.92	Committee to Consider Compulsory Health Insurance	1,278.01
Interest on Deposits.....	303.84	Doubtful Accounts Charged Off..	49.16
	<u>\$26,725.73</u>	Accountants	200.00
Excess of Expenditures over Income.....	1,889.10	Treasurer's Bond	12.50
	<u>\$28,614.83</u>	Car Fares	18.66
		Express	46.22
		Collection and Exchange	3.25
<i>Expenditures.</i>		Traveling Expense—General	759.50
Telephone	\$153.69	Traveling Expense—A. M. A.	76.44
Stationery and Printing.....	489.54	President's Office—Telegrams for Legislative Work	124.95
Postage—General	93.45	Sundries	312.70
Rent	900.00	Cost of Directory	3,600.57
Insurance	6.27	Cost of Journal.....	5,660.18
Legal Expense	9,000.00		<u>\$28,614.83</u>
Committee on Legislation.....	416.27		
District Branches	555.94		

REPORT OF THE COUNCIL.*To the House of Delegates:*

The Council of the Medical Society of the State of New York begs leave to present the following report:

During the past year meetings have been held on the following dates:

May 8, 1919, in Syracuse. Minutes will be found in the NEW YORK STATE JOURNAL OF MEDICINE, Volume 19, No. 6, page 215.

December 13, 1919, in New York City. Minutes will be found in the NEW YORK STATE JOURNAL OF MEDICINE, Volume 19, No. 12, page 437.

Respectfully submitted,

EDWARD LIVINGSTON HUNT,

March 1, 1920.

Secretary.

REPORT OF THE COMMITTEE ON PUBLICATION APPOINTED BY THE COUNCIL.*To the House of Delegates:*

The Council at the meeting held in Syracuse on May 8, 1919, appointed the following Committee on Publication. Drs. Samuel W. S. Toms, Harlow Brooks, W. Meddaugh Dunning, Edward Livingston Hunt, and A. Clifford Mercer. Dr. John Cowell MacEvitt was appointed Editor, and Dr. Floyd M. Crandall Assistant Editor, during Dr. MacEvitt's absence in France.

JOURNAL.

The JOURNAL for 1919 has been issued monthly, the edition being a little larger than 1918. The cost to the Society of \$5,660.18 shows an increase of \$940.95. This increase is due to the large increase in the cost of labor, paper, etc., and also to the necessity of publishing a larger edition due to the increase in membership. It is in no way due to a decrease in the receipts from advertisements, which have been most satisfactory and show an increase of \$1,423.68 in 1919 over 1918.

The receipts from sales and subscriptions were practically the same as in the previous year.

All moneys were collected and all bills paid with the exception of those for December, which were not received until after January 1, 1920, owing to the delay in the publication of the December issue, due to the printers' strike.

DIRECTORY.

The Committee greatly regrets the delay of almost three months in the publication of the Directory, due to the printers' strike, which tied up all work in New York City from October 1st until the end of November. For the same reason, it is impossible to give the exact cost of the publication of the Directory to the Society, as there is still money to be collected from advertisers and sales.

The cost for publication and delivery amounts to \$6,500, which, added to the \$4,349.57 paid during 1919 for postage, salaries, commissions, stationery, etc., would make the cost of the

Directory \$10,849.57. After deducting from this \$3,000 received for advertisements, and \$800 for sales, the cost to the Society would be about \$7,000, an increase of \$1,200 over last year's book. This increase, although mostly due to the high cost of labor and paper at the present time, can also be accounted for by the necessity of publishing 300 more books than in 1918, in order to meet the increase in membership and sales, the latter of which amounted to several hundred dollars more than during the previous year. The advertisements show an increase of \$800 over 1918.

Respectfully submitted,

March 1, 1920.

S. W. S. TOMS, *Chairman.*

REPORT OF THE COMMITTEE ON ARRANGEMENTS*To the House of Delegates:*

The Committee on Arrangements begs to report that the arrangements for the meeting have all been completed.

The Grand Ballroom of the Pennsylvania Hotel has been secured for the Opening Meeting, following which there will be a reception to the President and President-elect, followed by a dance.

The Sub-Committees which have been appointed on Reception, Dinner, Hotels and Registration, and Rooms and Lanterns, have all completed their work.

The prospects for the Annual Meeting are that there will be a full attendance and the meeting a satisfactory one.

Respectfully submitted,

March 1, 1920. CHARLES H. PECK, *Chairman.*

REPORT OF THE COMMITTEE ON MEDICAL RESEARCH.*To the House of Delegates:*

The Committee on Medical Research desires to report that, during the current session of the Legislature up to the present, but one bill has been introduced which intends to restrict animal experimentation by excluding dogs for this purpose.

Senator Boylan's measure, Senate Bill Int. No. 69, "An act to amend the penal law in relation to experiments upon living dogs," is the bill in question.

Referred to the Committee on Codes, this Committee held a public hearing on March 10, at 2 P.M. Your Committee and the profession were ably represented by Drs. Lee, Simon Flexner, Park, Nicholl, Madill, Wadsworth, Longcope, Wallace, Col. Russell, U. S. A., and others.

The bill is still "in Committee" at this writing.

Respectfully submitted,

FREDERIC E. SONDERN,

March 1, 1920.

Chairman.

REPORT OF THE COMMITTEE ON SCIENTIFIC WORK.

To the House of Delegates:

Your Committee on Scientific Work has the honor to submit the following report of its activities:

A large part of the work of this Committee was naturally carried on by correspondence between its Chairman and the officers of the various sections. There was but one formal meeting, which was held on October 20, 1919, at which the entire Committee and the President of the State Society were present.

At this meeting there was a discussion as to whether the sessions should be entirely devoted to papers, or whether part of the time should be taken up by a clinical program.

Dr. Syms, Chairman of the Committee, and Dr. Madill, President of the State Society, felt that making clinics part of the program was not advisable, as it broke up the section idea, and men who wished to visit clinics would have plenty of opportunity in New York to do so, without making them part of the State Society program.

The question of holding joint sessions was taken into consideration and the final decision of the Committee was that a limited number of joint sessions was desirable, especially when they were so conducted as to bring important subjects before the Society in the form of symposiums, as this added interest to the meeting and enabled the Society to function as an information bureau to bring certain topics up to date for the consideration and interest of the members at large.

The Chairman would further report that the subsequent work of the Committee was carried on by correspondence, and that the officers of each section have performed their work admirably, as shown in the results of the program which will be presented at the meeting.

The Committee has been fortunate enough to secure Dr. John H. Finley as our public speaker. Dr. Finley as Commissioner of Education is naturally an authority on many subjects which intimately concern the medical profession. His scholarly attainments and his well-known eloquence as an orator make us feel assured that we shall have an inspiring address from him at our public meeting on the evening of Tuesday, March 23d.

Trusting that the acts of your Committee meet with your approval, we are respectfully submitting the above report.

PARKER SYMS, *Chairman.*

March 1, 1920.

REPORT OF THE COMMITTEE ON LEGISLATION.

To the House of Delegates:

This report must necessarily be a tentative one, since it is written early in the session of the Legislature (March 6) and before any action was taken on bills which were of immediate interest to the profession. A more complete report will be made to the House of Delegates when in session.

The bill of predominant interest, known as the Compulsory Health Bill, has not as yet been presented to the Legislature this year, but we are informed that it will be introduced for "educational purposes" only; since the proponents are aware that it will not pass the Senate or the Assembly this year. Our best information, however, suggests that the proponents will continue their efforts to obtain either this bill or one equally obnoxious during this or some subsequent Legislature. We must continue to neutralize and stamp out the mass of falsifications and unwarranted assumptions which the proponents are copiously using as a propaganda to achieve their selfish end.

The State Department of Health has provided your Committee with a memorandum of a skeleton bill which authorizes a county, city or consolidated health district to create and maintain one or more centers and providing State aid therefor. Its purposes are:

1. To provide for the residents of rural districts, for industrial workers and all others in need of such service, scientific medical and surgical treatment, hospital and dispensary facilities and nursing care, at a cost within their means, or, if necessary, free.

2. To assist the local medical practitioners by providing:

- (a) Facilities for accurate diagnosis by a co-ordinated group of specially qualified physicians and surgeons, both for hospital patients and for out-patients.
- (b) Consultations and advice as to treatment by medical and surgical experts.
- (c) Clinical, bacteriological and chemical laboratory service and X-ray facilities at moderate cost, or free when necessary.

3. To encourage and provide facilities for an annual medical examination to detect physical defects and disease and to discover conditions favorable to the development of disease, and to indicate methods of correcting the same.

4. To provide or aid in securing adequate school medical inspection and school nursing service.

5. To secure or aid in securing better enforcement of the Public Health Law and a more effective administration of public health activities within the area served.

6. To provide a Public Health Nursing Service adapted to and adequate for the community served.

7. To aid in securing the dissemination of information in regard to Public Health throughout the area served.

8. To aid in securing adequate compensation for medical and surgical care rendered in hospitals and clinics, in order that efficient service may be everywhere available.

9. To provide laboratories, group diagnosticians, consultants and hospital facilities in the smaller cities and rural districts.

10. To provide medical libraries, including books, pamphlets, periodicals, leaflets, exhibits, moving picture films, and kindred educational facilities, with halls for meetings if needed.

11. To provide hospital and other necessary resources for dealing promptly with epidemics.

12. To reduce illness and disability among the industrial workers of the State by providing prompt and accurate diagnosis and efficient treatment for sick and injured workers and the members of their families.

13. To co-ordinate Public Health activities within the district.

It provides for a grant of sixty cents per day for every free patient maintained in any hospital operated as a part of a health center.

It provides for new construction and equipment of hospitals, one-half the cost to be paid by the State, such payment not to exceed \$750 per bed, and beds for the purpose of this provision to be in proportion not in excess of one to each 500 of the population.

It provides for clinics and annual medical examinations.

It provides for out-patient clinics equal to one-half of the initial cost of establishment, the amount to be paid by the State for this purpose, not to exceed \$5,000 per clinic and twenty cents for each treatment in such clinic.

It provides a grant of fifty cents for each free, comprehensive, annual medical examination made at the health center.

It provides for a grant from the State of one-half of the annual cost of maintenance of laboratory of health center, the sum to be paid by the State not to exceed \$3,000 per annum for each laboratory, and \$1,500 toward the initial installation and equipment of such laboratory.

Since this bill has yet to be introduced, and since there will likely be no action taken before the session of our House of Delegates, and since your Committee has had little opportunity to study its merits or demerits, we simply present the facts for the consideration of the House of Delegates.

Then again, the National Civic Federation, an organization working through the entire States of the Union and which is consistently and per-

sistently opposed to compulsory health insurance in any form, has evolved a constructive plan to be dealt with by the Legislature. It contends that the immediate problem for consideration is not that of insurance against sickness, but the larger and more important problem of the extent of illness and the methods for its prevention. It has set itself to this task and submits to the Legislature of the State of New York the following facts:

"At present there is no exact information as to the extent of illness. It is clear, from studies which have been made, that a considerable proportion of the population does not receive any medical care whatever; that others are unable to obtain adequate medical treatment, and that a very large percentage of existing sickness could be eliminated if proper preventative measures were employed. Large sums are being paid annually by the different States for the maintenance of institutions for the treatment of disabilities and their consequences, due largely to neglect. A large number of communities are engaged in no active health work and have grossly insufficient appropriations for health activities.

Statistics of other sickness surveys in the hands of this Committee prove beyond doubt that a large percentage of disabling illness is caused by communicable diseases. There is competent medical authority for the belief that many of the diseases of later life are the sequelæ of infectious diseases contracted in childhood.

The subject of sickness needs to be considered from the following aspects, in the order of their importance, namely:

1. Prevention.
2. Treatment and care.
3. Replacement of Wage Loss from Sickness.

Therefore, we respectfully recommend that the Legislature consider the appointment of a Special Commission, competent and duly empowered, to make a careful and exhaustive investigation and study of the extent, prevention and treatment of sickness, and that such Commission be instructed specifically to study and report upon the following questions:

1. Methods and means for the prevention of disease.
2. Methods and means for the education of the people in the fundamental principles of health.
3. Methods and means for bringing adequate medical care within the reach of all.
4. The establishment of diagnostic clinics throughout the State.
5. The establishment of clinics or other facilities throughout the State for the periodic medical examination of persons applying therefor.
6. The further development of public health nursing throughout the State.

7. Methods and means for the adequate care of maternity cases.

8. Co-ordination of public and private health agencies.

9. The determination of the extent of dependency upon public or charitable relief in the State and of the extent to which such dependency is due to illness."

When either or both of these bills will have been introduced and printed, your Committee will give them study, and we hope to make some recommendations in our final report.

The profession is becoming befogged by the numerous bills presenting themselves to deal with the narcotic question. The present law seems very inefficient in its working and we believe most of the physicians of the State are a unit in suggesting that the present law should be modified, at least to the extent that it should harmonize with the Federal law. Of the several bills introduced, your Committee is most impressed with the one introduced by Assemblyman Cotillo. This bill

1. Abolishes the State Narcotic Commission and places its jurisdiction under the State Department of Health.

2. It forbids physicians to treat so-called drug addicts, except in licensed institutions.

3. It takes away the red tape required in the purchasing and reporting of narcotic drugs, now imposed on the profession.

4. It follows more closely the requirements of the Federal law.

5. It provides a plan for the treatment of addicts.

A study of this bill suggests that the House of Delegates should support it.

The annual Chiropractic bill bobs up serenely this year, just as it has annually in the past. Strange to say, however, the proponents of this bill have a faculty to get it reported out of the Committee—a dangerous procedure. We shall vigorously oppose this bill.

Senator Carroll introduces a bill "to define and regulate the practice of drugless therapy." In defining and regulating drugless therapy, it legalizes massotherapy, mechanotherapy, electrotherapy, hydrotherapy, naturopathy, chiropractic, napropathy, neuropathy, dietetics, suggestive therapeutics, magnetic healing, vibrotherapy, zonotherapy or any other drugless method in use. It provides for a board of seven, independent of the present board. The danger signal of this bill is the grouping together of the various cults which may solicit considerable strength.

The Annual Registration bill has been introduced. This bill was endorsed by the Council last year and therefore has our support this year. Had it passed last year, we would have had less trouble with other bills, such as the chiropractic

and drugless therapy bills. Notwithstanding some objections on the part of some of our physicians, the effects that will be produced by the annual registration of physicians in clearing the ranks of all cults and fakirs, more than offset any objections which prevail against the bill.

Respectfully submitted,

J. RICHARD KEVIN,
Chairman.

March 6, 1920.

REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS.

To the House of Delegates:

Your Committee on Medical Economics has this year increased its field of work by studying several phases of medical practice and of medicine and medical education, as well as all impending public health legislation.

Prior to the Special Meeting of the House of Delegates at which the Special Committee for the study of Health Insurance reported, your Committee undertook no independent work relative to social insurance. Since the report and discharge of the Special Committee it has resumed its work.

The two most important studies undertaken are a partially completed resurvey at Chelsea, N. Y., and a special study made to determine the amount of sickness amongst wage earners in proportion to that amongst their dependents.

As a result of its work your Committee asks your consideration of the following topics:

1. Social Insurance.
2. Workmen's Compensation.
3. Annual Reregistration.
4. Educational Requirements for Medical College Entrance.
5. Medico-Legal Practice.
6. Extension Post-Graduate Work.
7. Narcotic Drug Control.
8. Voluntary Group Insurance.
9. National Health Conservation.
10. National Prohibition.
11. Multiple Registration.
12. Legal Defense.

1. Health Insurance. Because of the unanimous vote against Compulsory Health Insurance by the House of Delegates at the special meeting held in November, 1919, your Committee will not present the subject as a whole for your consideration. It is, however, the opinion of your Committee that studies of social conditions bearing upon the general subject of social insurance should be pursued by it, and it, therefore, presents an outline of the work now in hand.

Questionnaire No. 2 referred to in the last Annual Report as incomplete, has had to be at least temporarily abandoned because of the unwillingness of many of the working men to supply the desired information. This questionnaire was cir-

culated for the purpose of obtaining data on absenteeism.

The value of many of the social surveys quoted by the proponents of health insurance as evidencing insufficient medical education having been questioned, your Committee has undertaken to check up one of them by resurvey of Chelsea, N. Y. This district was selected because of its accessibility.

The original survey showed that 28% of sick people were not receiving medical attention. While none of our figures are complete, the indications are that this group will be much reduced. About 70% of the people so far certified as sick and not receiving medical care are found to have adequate means for securing such care should they desire it. 2% of this group stated that they were unable to obtain medical care because of isolation, although they were able to pay for it.

This resurvey was discontinued during the extreme weather but will be resumed as soon as possible.

An independent survey of sickness amongst employees, and their dependents, of a carpet factory in a rural district was undertaken primarily to determine the ratio of illness amongst employees to that amongst their dependents. It was 14 to 86. As these employees were men and women and boys and girls over 16 years of age, it is apparent that the industry is not responsible for the illness.

The average weekly wage of three hundred of the four hundred and forty employees of these mills was 24 plus dollars. The other one hundred and forty employees failed to, or declined to answer this question.

The average weekly wage of the heads of the families in this group was 33 plus dollars. The average annual expenditure of the heads of families for themselves and their dependents for medical and surgical care was \$43, or a little over 2½% of the annual income.

The average number of days lost through illness per year was 6 1/10, making an annual wage lost of about \$32.34, or 2 plus percent of the annual wage.* 91% of these employees carry life insurance, and 89% carry it on their dependents over six years of age. 83% of the men over 18 years of age belong to fraternal organizations, paying a weekly sick benefit of \$5, and a death benefit from \$100 to \$250. Some of these organizations also supply medical treatment and medicines without extra charge.

34% of the women workers belong to benefit societies paying a weekly sick benefit and cash benefits. The average cost of membership in these societies was \$7.20 per year. All of the orders are financially sound.

* The average wage of the group of employees was \$28.50 per man.

While there is no question but that the conditions at these mills are better than the average, and while the investigations cover a small group, the figures are such as to raise the question as to whether or not the demand for application of alleviating measures to employees is as great as the proponents of health insurance would lead us to believe.

Your Committee has studied the report of the provost marshal general, extracts from which show the amount of preventable disease as found on examination of drafted men, and have been widely published. We believe that the question of the conditions there shown is a matter for education and our recommendations are included in our sub-heading, National Health Conservation.

The conditions referred to in the above mentioned report, will not, in our opinion, be met by the enactment of any of the proposed health insurance laws, notwithstanding that such is the claim of the proponents of these measures.

The matter of the conservation of the public health is vital, and one of the most important duties of the medical profession.

Your Committee urges, therefore, that the Society record itself in favor of legislation which will insure progress towards this end.

Your Committee is not prepared at this time to present a plan for your consideration. It has plans under consideration and for convenience has divided the subject of public medicine as follows:

1. Research Work on Heredity.
2. Prenatal Care.
3. Post Partum Care of the Mother.
4. Infant Hygiene.
5. Child Hygiene.
6. Child Labor.
7. Control of the Hygiene of Industry.
8. Personal Hygiene.
9. Communicable Diseases.
10. Social Medicine.

These subjects are being taken up and studied in detail and will compose the subject matter of a subsequent report.

2. Workmen's Compensation. A bill (No. 253, Int. 251) has been introduced in the Assembly by Mr. Brady, which amends the workmen's compensation law, and provides benefits under it for employees suffering from diseases due to occupation. The diseases and conditions covered by the act are, as follows:

<i>Description of Diseases</i>	<i>Description of Process</i>
1. Anthrax.	1. Handling of wool, hair, bristles, hides, and skins.

<i>Description of Diseases</i>	<i>Description of Process</i>	<i>Description of Disease</i>	<i>Description of Process</i>
2. Lead poisoning or its sequelæ.	2. Any process involving the use of lead or its preparations or compounds.	face of the eye, due to tar, pitch, bitumen, mineral oil or paraffin, or any compound, product, or residue of any of these substances.	compound, product, or residue of any of these substances.
3. Mercury poisoning or its sequelæ.	3. Any process involving the use of mercury or its preparations or compounds.	16. Miner's nystagmus.	16. Mining.
4. Phosphorus poisoning or its sequelæ.	4. Any process involving the use of phosphorus or its preparations or compounds.	17. Glanders.	17. Care of any equine animal suffering from glanders; handling the carcass of such animal.
5. Arsenic poisoning or its sequelæ.	5. Any process involving the use of arsenic or its preparations or compounds.	18. Compressed-air illness or its sequelæ.	18. Any process carried on in compressed air.
6. Ankylostomiasis.	6. Mining.	19. Subcutaneous cellulitis of the hand (beat hand).	19. Mining.
7. Poisoning by nitro- and amido-derivatives of benzene (dinitro-benzol, anilin, and others), or its sequelæ.	7. Any process involving the use of a nitro- or amido-derivative of benzene or its preparations or compounds.	20. Subcutaneous cellulitis over the patella (miner's beat knee).	20. Mining.
8. Poisoning by carbon bisulphide or its sequelæ.	8. Any process involving the use of carbon bisulphide or its preparations or compounds.	21. Acute bursitis over the elbow (miner's beat elbow).	21. Mining.
9. Poisoning by nitrous fumes or its sequelæ.	9. Any process in which nitrous fumes are evolved.	22. Inflammation of the synovial lining of the wrist joint and tendon sheaths.	22. Mining.
10. Poisoning by nickel carbonyl or its sequelæ.	10. Any process in which nickel carbonyl gas is evolved.	23. Cataract in glass-workers.	23. Processes in the manufacture of glass involving exposure to the glare of molten glass.
11. Arsenic poisoning or its sequelæ.	11. Handling of arsenic or its preparations or compounds.	24. Dope poisoning (poisoning by tetrachlor - methane, or any substance, as, or in conjunction with, a solvent for acetate of cellulose or its sequelæ).	24. Any process in the manufacture of aircraft.
12. Lead poisoning or its sequelæ.	12. Handling of lead or its preparations or compounds.		
13. Poisoning by Gonioma Kamassi (African boxwood) or its sequelæ.	13. Any process in the manufacture of articles from Gonioma Kamassi (African boxwood).		
14. Chrome ulceration or its sequelæ.	14. Any process involving the use of chromic acid or bi-chromate of ammonium, potassium, or sodium, or their preparations.		
15. Epitheliomatous cancer or ulceration of the skin or of the corneal sur-	15. Handling or use of tar, pitch, bitumen, mineral oil, or paraffin, or any		

If Section 41 of Article 2 relative to certifying physicians be eliminated, and replaced by one empowering every physician in the State to certify to the conditions enumerated above, your Committee advises that the bill be given the approval of the Society. The Section in question is as follows:

"Certifying physicians. The industrial commission, with the assistance of the industrial council, and under civil service rules, shall, so far as they are needed appoint one or more competent and suitable physicians in such districts as

the commission and council, in joint session, select, whose duty it shall be to examine any workman who so requests and certify (1) whether he is suffering from a disease mentioned in the schedule of diseases in section forty-nine of this article, and (2) whether he is thereby disabled from earning full wages at the work at which he was employed, and (3) whether the disease is due to the nature of the employment and contracted therein, and (4) the date on which the disability began."

3. Annual Re-registration. The Annual Re-registration Bill, which has been called to your attention on several occasions, and which you have rejected by a vote of the House of Delegates, is being kept actively before the profession by the State Department of Education.

The main objection which has been urged to this bill is the annual tax of \$2 which is levied upon the members of the medical profession. The objection has been made, not to the \$2, but to the principle which taxes a certain group for a measure introduced as a general public benefit.

Your Committee has discussed this phase of the bill at length with the Department of Education, and that Department is convinced of the futility of attempting to pass this bill without the tax provision. The contention is that the legislature will not pass the bill if it carries an appropriation. While your Committee is not as certain about this as is the Department, there is no question but that the bill will pass more readily if it carries this provision.

Similar laws, carrying the fee requirement, now control the practice of dentistry and veterinary medicine.

Your Committee realizes that the benefits to public health which would result from a better control and prosecution of illegal practitioners are beyond dispute and, therefore, again asks your consideration of this bill.

4. Educational requirements for medical college entrance. Your Committee has viewed with some alarm the decreasing number of students annually entering our medical schools. Inquiry shows that this depends primarily upon the increased educational requirements for entrance.

The opportunities for advancement and the acquisition of financial and social rewards in other fields have increased to such an extent during the past few years that young men find ample reason for seeking them. Medicine as a career no longer holds the distinctive position which it did, and the fact that at least seven years of study after leaving preparatory school are required before a degree in medicine will be granted, and that a young man will have reached the age of twenty-six to twenty-eight years before he can hope to earn his first dollar, is a common reason for his choice of some other field of endeavor. Notwithstanding this, it is

evident that the Universities are contemplating still further requirements.

Your Committee is fully appreciative of the great value of a broad cultural education and has been gratified at the increasing number of men who elect to take full college work as a preparation for medicine.

At the same time your Committee is aware that many men who possess the qualifications necessary for success in medicine, are prevented from entering the profession when these qualifications are obligatory.

Your Committee advises, therefore, that the Society record itself as opposed to any further increase in educational requirements for medical college entrance.

Your Committee finds it is in accord with the State Department of Education in this matter.

5. Medico-Legal Practice. There is practically no difference of opinion among the physicians regarding the ineffectiveness of the present system of expert testimony employed to determine mental responsibility in criminal cases. Opposition to and criticism of the system have occurred from time to time during the past twenty-five or thirty years and numerous suggestions have been made for the proper remedy.

The most noteworthy effort at correction of the expert testimony evil was directed by a Special Committee of this Society, of which Dr. Dwight H. Murray was Chairman, acting with a similar Committee of the New York State Bar Association. These joint committees prepared a bill which was introduced into the Assembly and which passed both Houses twice, being vetoed by Gov. Sulzer and, a year later, signed by Gov. Whitman. This bill amended the Judiciary Law referring to a criminal action or proceeding or in a special proceeding instituted by habeas corpus or certiorari to inquire into the cause of detention where soundness of mind is in question. It provided for the appointment by the court of not more than three physicians who should inquire into the soundness of mind of the person in question.

This, your Committee believes, is an entering wedge for further similarly progressive amendments of the law.

If it is constitutional, we approve of a plan whereby permanent commissions should be established in each judicial district to which all questions affecting the mental status of any person accused of a crime should be referred. Whether questions of sanity or of responsibility arising in habeas corpus or certiorari proceedings should take the same course or not is a question upon which we have had insufficient legal advice.

We further urge that where the commission of the crime is not in question the determination of a commission of the irresponsibility of the accused should be final; and that the accused

should not be tried but should be committed by the court to the proper institution for the criminal insane.

Your Committee makes this latter recommendation because the legal definition of insanity is inadequate, and by reason of the nature and character of legal proceedings must probably always remain unchanged. By reason of this, miscarriages of justice occur and proceedings in themselves dignified may become travesties upon justice, and are a reflection upon both Law and Medicine.

The experience of your Committee leads it to believe that the legal profession would favor such a plan, the detail being in conformity with legal practice, and while it is improbable that such a change will be promptly made, asks that the Society lend the weight of its approval and so record itself.

6. Extension Post-Graduate Work. The benefits to be derived from post-graduate studies have never been questioned, but they are denied to a large number of the profession because of lack of time and opportunity. It is therefore suggested that a systematic scheme of post-graduate work be undertaken under the auspices of this Society.

The following initial plan is offered for your consideration: Under the direction of a special committee, or your Committee on Medical Economics, a program should be drawn up which would supply the best teachers of the profession to certain districts throughout the State, at least once, perhaps twice, a year.

In detail, the plan includes the selection of a sufficient number of centers to enable the attendance of every physician in the State. These centers should be preferably cities having hospital facilities for clinical work. Lectures and clinics covering some special branch of medicine or surgery should be held at these selected points, and continue over a sufficient period each year to enable comprehensive, though intensive, courses of study.

The recommendations for special subjects each year, rather than an intent to cover a considerable part of the whole field of medicine is, in the opinion of your Committee, an essential feature of the success of the undertaking.

We advise that the State be districted by county societies and that the several societies included in each district assume the responsibility for the courses of study, and elect the special subjects.

The Committee of the State Society having the matter in charge should arrange for the teachers, and either engage such teachers directly or supply the county societies with the names of the most available men from which they may make their selection.

The Committee of the State Society should supply the county groups with outlined courses

of study in the several branches of medicine and, in a general way, maintain a bureau of information.

We ask specific action upon this plan, the understanding of the Committee being that no work shall be done until funds become available.

7. Narcotic Drug Control. A bill, recently introduced into the Assembly by Mr. Cotillo of New York City, provides for the abolition of the Department of Narcotic Drug Control and transfers its activities to the State Department of Health.

Your Committee feels that the Society should encourage all measures tending to centralize public health work in the Department of Health. It, therefore, advises your approval and support of this measure.

8. Voluntary Group Insurance. Your Committee finds that a group sickness insurance is gaining in favor in some trades. This insurance is usually furnished by the employer and carries with it medical attention and, in some few instances, a weekly cash indemnity.

We believe that schemes of this kind encourage the poorest character of practice and are to be condemned because of the ultimate bad influence which such practice exerts upon the health of the so-called beneficiaries. While we see no grounds upon which the State Society can take official action, we feel that the matter should be included in our report if merely as a subject of information and, if it is your pleasure, for discussion.

9. National Health Conservation. The United States Public Health Service has begun a campaign of education especially directed toward personal hygiene. The object aimed at is the elimination of preventable diseases. Numerous organizations have been invited to co-operate in this work. Of these, the National Red Cross will probably render the most efficient aid because of the character of its nation-wide organization.

The program of the joint organizations has not yet been published, but it will undoubtedly be comprehensive.

Your Committee suggests that you give this work your approval and direct the Council to co-operate in any work which may be undertaken in this State.

10. National Prohibition. The one phase of national prohibition which is of interest to the medical profession is the limitation of the quantity of distilled spirits which may be prescribed.

Advices from the collector of internal revenue place the amount prescribable for any one patient at one pint every ten days.

If alcohol is to be used as a remedial agent such an amount is ridiculously inadequate in many cases.

Your Committee suggests that the Society record itself in favor of amending this portion

of the regulations by expunging all limitations of the quantities to be prescribed in a given case.

In making this recommendation, your Committee feels that the prescription blanks supplied by the Internal Revenue Department provide a sufficient check to the abuse of the prescription privileges.

11. Multiple Registration. The lack of uniformity in dates and in character of the several registrations which are now required annually by physicians is confusing, and results in frequent unintentional evasions of the law.

Your Committee advises that an effort be made to include all these registrations in one form, or, at least, in one group, and suggests the advisability of directing that the Council endeavor to bring this about.

12. Legal Defense. Inasmuch as several regulations have been enacted which affect the practice of medicine, and inasmuch as a physician may be guilty of infringement of these regulations without any criminal intent, your Committee feels that the subject of furnishing legal defense in these cases should be considered by the Society.

It, therefore, suggests that a special committee be appointed by the chair to take this subject up with the Counsel of the Society and report at the next regular meeting of the House of Delegates.

Respectfully submitted,

HENRY LYLE WINTER, *Chairman*
ARTHUR F. CHACE,
GEORGE W. KOSMAK,
WESLEY T. MULLIGAN,
HENRY G. WEBSTER.

March 1, 1920.

REPORT OF THE COMMITTEE ON PUBLIC HEALTH AND MEDICAL EDUCATION.

To the House of Delegates:

The Committee on Public Health and Medical Education begs to report that during the fiscal year just elapsed no business of moment has been transacted by the Committee.

We note with regret the death of Dr. William G. Bissell, of Buffalo, whose valuable services in the New York State Department of Health are well known to us all.

In 1910 the Committee on Public Health urged the establishment of county diagnostic laboratories in the thirty-eight counties of the State containing hospitals. It was then suggested that these laboratories be centralized in the State Department of Health. It is interesting to note that, while the suggestions of the Committee have not been literally realized, nevertheless they have, in the ten years which have elapsed since then,

been put into effect, both in spirit and in fact. The growing importance of the work of the State Department of Health, the increasing facilities for special diagnostic work, and the evident desire on the part of the State to foster efforts looking towards conservation of the public health are matters of the utmost interest and cause for gratitude on the part of the medical profession. We as a great medical society cannot endorse too heartily what has already been accomplished; and at the same time we should pledge our enthusiastic support for any and all measures which will put all sections of the State on a parity, in point of securing to its citizens the benefits of modern medicine in its various departments.

The Medical Society of the State of New York, however, cannot afford to fall into the error of placing the stamp of its approval upon any measures involving the expenditure of vast sums of money, collectible through the assessment of a commonwealth already burdened with taxation, unless they are reasonably sure to produce the results for which they are proposed. It seems to the Committee on Public Health that the proposed legislation for the establishment of Compulsory Health Insurance falls within this category and should be opposed as disruptive of the best interests of the community, not only of its private individuals, but also of the medical profession, whose highest aims and ambitions are the betterment and maintenance of the public health. We cannot feel that the proponents of this measure have offered anything which could be either safe or successful, and we do feel, after hearing and reading much on both sides of the question, that the State Society should take the same unequivocal stand in opposing such legislation as it did a year ago. We are of the opinion that the best success for the State, in its effort to relieve individual sickness and raise the standard of individual health, will be found in the generous expenditure of moneys for the support and progressive development of our State Department of Health, the intensive education of the public in matters of personal hygiene and State sanitation in all of its ramifications, together with a program for the medical profession of the State, calculated not only to maintain a high standard of medical education, but also to avoid discouraging our best and brightest sons from entering the profession of medicine.

We feel it to be fairly debatable whether this measure is not a very small item in a general economic scheme, distinctly socialistic in its tendencies, which is likely to follow, when once a wedge is entered for its adoption.

Respectfully submitted,

JOSHUA M. VAN COTT, M.D.,
Chairman.

March 1, 1920.

**REPORT OF THE SPECIAL COMMITTEE
ON PUBLIC HEALTH OF THE GREATER
CITY OF NEW YORK.**

To the House of Delegates:

When the Committee on Public Health of the Greater City of New York looked over the field of its work it found that the narcotic drug situation was uppermost in the minds of those officials who were bent upon putting the Whitney law to an immediate test, and New York City was to be the district selected for the trial; at the same time certain U. S. Supreme Court decisions put teeth in the Harrison law and the Internal Revenue Bureau was making things lively with its decisions and actions. In June, 1919, the committee of the Treasury Department issued its report on "The Traffic in Narcotic Drugs." The registrations under the Harrison law totaled 233,491 for the year of 1918; of which physicians numbered 125,905, dentists 42,240, veterinarians 10,399, retail dealers 48,196, hospitals 3,799, importers 76, wholesale dealers 831. Of 4,092 manufacturers making proprietary medicines, 1,098 reported the use of either opium, morphine, heroin or cocaine in their preparations.

It has been estimated as high as 90 per cent of the opium entered for consumption is used for other than legitimate medical purposes. The annual per capita consumption of opium is given as follows: Austria, half grain; Italy, one grain; Germany, two grains; France, three grains; United States, thirty-six grains. The average dose of opium is one grain; the amount consumed in the United States is sufficient to furnish thirty-six doses for each man, woman and child. In 1915 there was consumed in the country 490,000 pounds of opium. It is estimated that about 75 per cent of the cocaine manufactured in the United States is used for illicit purposes.

Questionnaire No. 1 on drug addiction was sent to the chief of police of 1,263 cities in the United States having a population of over 5,000. Replies were received from 760, of which 372 reported no available records or data.

No. 2 was sent to 3,271 wardens of State, county and municipal prisons and reformatories, to which 762 replied; of these, 126 contained certain information and 636 were returned with the statement that no records had been kept, therefore no information was available.

No. 3 was sent to 2,464 superintendents of State, county and municipal almshouses, 584 to superintendents of State hospitals, 471 to superintendents of insane asylums, 1,582 to county and municipal hospitals, making a total of 5,101 institutions; only 1,520 replies were received, or only about 30 per cent of the total number.

Out of 2,480 cases of addiction, the report stated that the occupations of addicts in order of their frequency were given as follows: Housekeepers, laborers, clerks, physicians, salesmen, nurses, pharmacists, actors, prostitutes, waiters, cooks, sailors, soldiers, horsemen, barbers, butchers, bartenders, draftsmen, teachers and unemployed.

No. 4 was addressed to 3,023 State, district, county and municipal health officers; 983 replies were received, or 33 per cent of the total number sent out; 777, or only 26 per cent, contained any information of value to the committee. The habit was acquired in the following ways: 1, physicians' prescriptions; 2, use of drugs in chronic diseases; 3, prohibition; 4, association; 5, use of patent medicines; 6, prostitution; 7, as a means of producing stimulation; 8, curiosity. With respect to treatment of drug addiction, 88 health officials reported that physicians in their community followed special procedures, while 357 reported that physicians followed the procedure commonly known as the reduction treatment. These health officials also stated that 192 cities and counties over which they had jurisdiction make provision for the treatment of addicts in almshouses and penal institutions.

No. 5 was sent to 4,568 superintendents of private hospitals and sanatoria. Only 227 contained any information of value; most of them replied that no records were kept or that the records of the institution were not arranged in such manner as would give the information desired.

The illegitimate traffic is believed to nearly equal the legitimate, and smuggling from Canada, Mexico and along the Atlantic and Pacific coasts is a source of illegitimate supply. Owing to the lack of proper records it has been impossible to do more than guess at the number of addicts in the United States, but taking all the collected facts into consideration the number is somewhere between 300,000 and 1,000,000. The reports show that there is less drug addiction in the country than in the larger cities. The questionnaires on the narcotic drug situation showed the want of proper records and reliable statistics in a startling way, which the Federal and State governments should bestir themselves to remedy.

In the Greater City of New York district, where compulsory registration of narcotic drug addicts has been in force since July, 1919, there have been registered about 9,000 addicts, which is believed to be considerably less than the whole number resident in that district. Of the number of addicts registered, 7,464, 26 per cent had to do with transportation, as chauffeurs, motormen and drivers, and altogether representing 175 occupations, passed through the Emergency Clinic of the New York City Health Department.

Sex Grouping—

Males	5,882
Females	1,582
Total	7,464

Racial Grouping—

White	6,429
Black	1,035
Total	7,464

Reasons Assigned by Addicts for Acquiring Habit.

Bad Associates	5,190	69%
Illness	1,994	26%
Other Causes	280	5%

Age Grouping (66% Under 30).

Age ...	15-19	20-24	25-29	30-31	35-39	40-50	Over 50	T'l
Number	743	2,142	2,218	1,155	766	365	75	7,464
Percent.	9	28	29	14	10	9	1	100

Duration of Habit (79% Under 10 Years).

Years	Under 1	1-5	5-10	10-15	Over 15	Total
Number	272	2,796	2,838	1,103	461	7,464
Percent.	3	37	39	15	6	100

Nationality (Birthplace).

Australia	1	Italy	190
Africa	1	Japan	11
Austria	26	Mexico	7
Belgium	4	Norway	1
Canada	88	Roumania	320
Cuba	16	Russia	710
China	41	Spain	4
Denmark	4	Scotland	7
England	38	Sweden	12
France	9	South America	4
Germany	418	United States	5,182
Greece	112	West Indies	17
Holland	6		
Hungary	4		
Ireland	231	Total	7,464

Voluntary Commitment to Hospital.

Riverside Hospital	1,581
Metropolitan Hospital	78
Bellevue Hospital	36
Queensboro Hospital	32
Kings County Hospital	5
Workhouse Hospital	12

Total *1,744

*23% of clinic patients.

"DRUG ADDICTS"

Instead of many persons being made narcotic drug users incident to improper prescribing by careless doctors, it is found that drug addiction spreads like a pestilence through association. Our experience points, in a great many instances, to bad and vicious associates, 69 per cent. from their own statements.

These individuals either in need of the drug or under its stimulating influence are a distinct menace to society. They will commit the most revolting of crimes in cold blood.

Many of these unfortunates are easily determined as belonging to the feeble minded group.

Instead of all the drug addicts being of that thin, emaciated, starved, hollow-eyed, cadaverous type of individual, many—very many—appear physically normal.

Our experience, as indicated in the statistical data quoted, is that nearly 70 per cent. of the addicts are under 30 years of age, and have been less than ten

years on their drug, and that comparatively few have any physical reason for indulging in the practice.

The physical condition of many of these youths, male and female, indicates that most of them can be saved and reformed into useful citizens. They are down, but are very far from being out.

No doubt, with suitable organization and funds for institutions which can furnish adequate and proper care for addicts, not only to effect withdrawal of drugs, but to rehabilitate them by several months' after-care in the open country, together with efforts to get them away from bad and demoralizing associates, into new and more useful occupations.

In a study of over 7,000 addicts in this city exemptions requested for persons ill of some disease numbered less than 250.

Drug addiction is not a mysterious disease, but a disturbance of function. There is little difference of opinion as to the methods of treatment provided the addict has no control over the taking of his drug.

Drug addicts, under careful medical and supervisory nursing, present no pathological condition—only perverted functioning.

It is our opinion that any form of cure can take an addict off his drug provided this is done promptly. This was done at Riverside Hospital, in 1,581 cases, in 3 to 5 days, without discomfort to the patient.

From information obtained from the large number of addicts, who have come to our clinic, most of whom have taken various methods of cure, it may be concluded that all methods of withdrawal are equally efficacious and only differ in regard to the comfort of the addict while taking the cure. Aftercare is always essential.

Treatment of the narcotic drug addict by private physicians prescribing and druggists dispensing, while the individual is going about, is wrong; for one reason he may secretly have more than one doctor supplying him with drugs. This ambulatory method, which means the giving of a narcotic drug into the possession of an addict for self-administration, should be forbidden. Until this is done by law, all honorable physicians should aid in stopping this vicious practice.

The case of drug addiction that can be cured by ambulatory treatment is the rare exception, and so unusual as to make one think it impossible.

Physicians generally are of the opinion that ambulatory treatment is not good practice, and few doctors use this form of treating addicts, so it is believed that those so doing must be either ignorant of proper methods, or do so in bad faith.

Harrison Act Enforcement.

Our study of this problem in this city indicates, most positively, the necessity for the general and uniform enforcement of the statutes. There will be no panic or falling in the streets, or robbing of drug stores or crowding of physicians' offices by the addicts affected. If they cannot obtain a supply, they will reform, and it is certain that not a fatality will be recorded.

Through the kindness of Health Commissioner Dr. Royal S. Copeland and Dr. S. Dana Hubbard, Director of Bureau of Public Health Education, I was permitted to quote the above from the advance sheets of the report of the Health Department.

Habitual users of narcotic drugs may be divided into two classes:

Class 1. Those who suffer from a disease or ailment requiring the use of narcotic drugs.
Class 2. Addicts: Those who use narcotic drugs for the comfort they afford and solely by reason of an acquired habit. Class 2 may be subdivided

into: (a) correctional, (b) mental defectives, (c) social misfits, (d) fortuitous (occurring by chance).

Of the 7,464 cases recorded by the New York City Health Department Clinic, 250, or $3\frac{1}{2}$ per cent, were of Class 1, and the remainder, about 96 $\frac{1}{2}$ per cent, were of Class 2.

During the year the chairman of the Committee called many conferences, and the following is from his notes on treatment of narcotic drug addicts. Dr. Emil J. Pellini, of the Department of Pharmacology of the New York University and Bellevue Medical College:

Mr. Chairman: I have been studying the subject of drug addiction for over a year, my endeavors covering observations on both human beings and animals. I feel that I would be a little premature in drawing definitive conclusions from my experiments, as I want to be positive that they have been controlled in every possible way before giving them wide publicity; however, I feel that I am justified in setting forth some of the opinions I have formulated from my observations up to the present time.

In the first place, there is the question of the withdrawal phenomenon. I feel that the so-called withdrawal symptoms have received a greatly exaggerated importance, for, in my, as undoubtedly in your experience, there have been a number of well controlled cases in which the withdrawal symptoms were entirely absent. I am satisfied from my observations that the withdrawal symptoms are purely functional manifestations and have no physical basis.

Secondly, I doubt the production of antibodies formed during addiction. In studying the literature one finds many conflicting reports as to the presence of antibodies. This in itself would cast a doubt on their existence, for if they were there in any amount it would be simple of proof; but as the matter stands there is still a great deal of confusion. Again, it is common knowledge that addicts that have been withdrawn from the drug have succumbed to a dose which but a few days previously they had tolerated without toxic manifestations. Rapid loss of tolerance has also been shown in animals.

I feel that a person can be withdrawn directly from any dosage. He may show symptoms, but as far as fatalities go, I am satisfied that they are not due to the withdrawal, but to some other concomitant condition. I do not believe that the amount of the drug that an addict had been accustomed to take plays any part in the psychological picture of withdrawal, but I think it is more of a question of the duration of time he had been addicted.

In regard to treatment I think the first essential is very thorough elimination. Whether one employs cathartics, diuretics, saline infusions, or what not, is immaterial; possibly a combination

is best. Catharsis is always indicated, as the addict is usually constipated.

Secondly, I believe that an immediate withdrawal is indicated. During the period of withdrawal symptoms, if any are present, some non-opiate depressant may be given.

From this on, I think that active treatment should begin, that is, building up the patient physically. This may be accomplished by tonics, nutritious food and sufficient exercise to produce healthy sleep. This also helps to restore his morale.

A slow reduction method, consuming ten to fifteen days, can be used with propriety if the patient is under absolute control. The aim of this method is to obviate the dread with which the patient looks forward to withdrawal; but the prolongation of the treatment, in my opinion, merely extends this period of fear. Of course, it is to be understood that any reduction treatment is valueless if the patient is entrusted with the drug for self-administration.

Dr. Conly, of Metropolitan Hospital.

Mr. Chairman: We have treated about 3,300 cases. Out of the 3,300 cases, about 2,300 of them are new cases, the rest, repeaters, some of them as many as six times, who were mostly so-called "underworld addicts" (heroin addicts). For the first three or four years they simply took heroin. For the past one and one-half years they had cocaine, in addition to heroin and, when asked why they took the cocaine, they stated that they did not know; that the doctor said it was better. In my opinion, the cocaine simply made them more active, accelerated their condition, and it required more heroin to hold them down. The morphine cases that we got, we treated in a different manner. As a rule, the morphine cases were cases that had been taking morphine for 10, 15, 20 and 30 years. Those cases were given reduction treatment—rapid reduction, cutting off the drug in seven to eight days; slow reduction, 28 to 30 days. After they came into the hospital, those taking heroin were all given morphine to hold them temporarily. I found that the best thing to control the vomiting was one-fourth grain of morphine—if they became excited, it would stop excitement—they need not know that they were getting morphine.

Of different kinds of treatment, I believe that hyoscine treatment, properly carried out, followed by after-care (I do not know how long, but you have to give them after-care, otherwise they go back to the drug) is the best. I believe that if the Health Department got a place in the country—like Warwick—we could give these addicts some proper after-care. One of the things we should do is to get the Federal Government to stop the manufacture of heroin. I

do not believe it is a necessary drug. It is only a recent drug, ten or twelve years old. Prior to that, if a doctor wanted to use something in a cough mixture he would use codeine.

The heroin addicts are the underworld addicts.

We have with us, from Philadelphia General Hospital, Dr. Doane, who has had considerable experience in this line of treatment.

Mr. Chairman: I really must apologize for having no formal statement in regard to our work at the General Hospital. Our experience at the Philadelphia General Hospital has been very similar to the experiences as narrated by the various physicians from New York City hospitals. Prior to the Harrison Act, an occasional struggling addict came to the hospital. Afterwards, they came to us in floods, and before we knew it we had 200 cases, with very little preparation for their care.

We have used, and do use now, hyoscine—immediate withdrawal—giving one dose on admission so as to gain the confidence of the patient.

One difficulty that we have in Philadelphia is that we have no way of enforcing a stay in the hospital. The addict wants to go to the hospital, but we have no commitment system whereby we can say "you are here for three months." We simply rely on the voluntary commitment, and so we find ourselves more or less in difficulty in enforcing discipline.

We still must hold that, since we see drug addiction, and burglary, and prostitution, and petty larceny, and all of the other major and minor infringements against law, we are inclined to feel that, in some cases at least, the thing which caused these illegal acts was possibly the thing which caused the willingness or the desire for drug.

Dr. Braunlich, of the Riverside Hospital of the New York City Health Department.

Mr. Chairman: Patients are sent to the Admission Building. It is here that a rapid reduction in their drug allowances takes place—no heroin is used. During the reduction period elimination is caused by the free use of cathartics, which are given on the fourth and sixth days. On the morning of the fifth day a saline is given, and on the morning of the seventh day, at 6 A.M., a large dose of castor oil.

The cathartic used is a capsule or tablet containing: Calomel, gr. $2\frac{1}{2}$; powdered rhubarb, gr. $2\frac{1}{2}$; powdered ipecac, gr. $\frac{1}{2}$; atropine sulphate, 1/180; strychnine sulphate, gr. 1/30. One is given at 3, 6 and 9 P.M. The patient is transferred to the Hyoscine Wards on his seventh day after admission, and he is given the first dose of hyoscine the moment he

becomes uncomfortable or shows withdrawal signs, usually 1/200 grain, and this is repeated at intervals frequent enough to keep up an anaesthesia corresponding to the first stage of an ether narcosis—the stage of excitement—they having a mild delirium, occasionally jerky muscular movements and, almost generally, a reduction in the pulse rate. This anaesthesia is kept up for thirty-six hours. If, during this period, the patient becomes very agitated (and at times a case becomes maniacal), we do not hesitate to give a dose of morphine. This does not, in any way, lengthen the duration of treatment.

Marked abstinence symptoms on withdrawal of drug are self-limited to about seventy-two hours.

About the tenth day after admission, the treated patient finds himself in the Convalescent Building. Although he is much weakened, he is more or less up and around.

I wish to emphasize the following: Marked withdrawal symptoms last for seventy-two hours, no matter what the treatment. Giving of small doses of hyoscine (preferably by mouth) to cases giving marked withdrawal symptoms after thirty-six hours' treatment is important. The giving of morphine (gr. $\frac{1}{4}$) is most useful to allay very active delirium during hyoscine medication without lengthening the time of treatment.

My personal opinion is, that the only way to get a lasting cure is by making it impossible for addicts to get the drug. At Riverside Hospital there were treated 1,600 cases.

Dr. Jewett, of Bellevue Hospital.

Mr. Chairman: My experience at Bellevue, in the past few years, has been so completely like that of Dr. Conly, of Metropolitan, and the other speakers, that I believe I cannot add a single thing. I firmly believe that the heroin addict is a different type from the morphine taker. The latter a different man to begin with and, consequently, you have more material to build upon after he is taken off the drug. As far as the medical treatment is concerned, I am quite in accord with what the previous speakers have said. I believe that hyoscine is a very useful drug, and very little has to be used if proper elimination has been carried out previously. I have used, in conjunction with this treatment, saline infusions, in several cases, but I do not know that I can say that it did anything more excepting that it made it possible to use a little less hyoscine in those cases. I am also in accord with what has been said about heroin. If heroin was not in existence we would have less drug addicts of that particular kind.

As to the number of cases treated, there were six to eight thousand, the withdrawal symptoms lasting about seventy-two hours.

I will now call upon Dr. Lambert.

Mr. Chairman: In 1888, when I began in Bellevue, I was interested in drug addiction because, in the cells, there were always about two per cent of drug addicts. Heroin was unknown then.

I have been very much struck with two things: one is the keen and accurate separation the gentlemen here make between the heroin addict and the morphine addict. I have seen both. There is a differentiation in that the heroin addict is lower in the scale than the morphine addict. Relative to the necessity of after-care: There is no question that, with the proper after-treatment, you will succeed in a very much larger percentage of your patients than if you let them drift out. I had tried it in about 200 patients at Bellevue,—eleven years ago—and I had looked them up afterwards. I found about four or five per cent really stayed off. As to the rest of them, I had no means of giving them after-treatment, and nearly all of them were back on the drug.

Chairman: As there seems to be a general agreement with the statement of Dr. Pellini as to the pharmacology of morphine, I shall ask the doctor to restate what he said.

Dr. Pellini: I feel that the so-called withdrawal symptoms have received a greatly exaggerated importance, for in my, as undoubtedly in your experience, there have been a number of well controlled cases in which the withdrawal symptoms were entirely absent. I am satisfied from my observations that the withdrawal symptoms are purely functional manifestations and have no physical basis.

All present agreed with the conclusions of Dr. Pellini.

Dr. Lichtenstein, physician to the New York City Prison, stated that he observed and treated more than 12,000 cases of narcotic drug addiction. There is no hard and fast rule as to the treatment of addicts, but in all cases the principle is the same:

1. Reduce the drug as rapidly as possible, at the same time giving tonic treatment.

2. Proper after-treatment.

It is quite simple to take a person off the drug, but it is another matter to keep him off the drug. I am in no sense referring to cases of cancer, chronic rheumatism or advanced tuberculosis. My observations on the pulse and pupils show pulse rate varies from 100 to 130 in individuals who have taken the drug for a short time, and in those who have taken it for a long time the rate is between 70 and 90, therefore the pulse *per se* is

no definite rule to go by. It is rare to find a contracted pupil in a confirmed addict, therefore the pupil is no sign that the addict has not had the drug immediately before his admission to the institution. Sometimes addicts are admitted who show no withdrawal symptoms. They are kept on strychnine and when the first withdrawal symptom appears are given some morphine, never more than one-half grain. I have never had a death as a result of treatment. Addicts may be taken off the drug in one, two or three weeks, never longer than three weeks.

Dr. Sherman states: I have treated in Kings County Hospital 2,000 cases of narcotic drug addiction without any deaths, and my method is that of immediate withdrawal, and I find but few cases requiring sedatives, such as the bromides. In my opinion the withdrawal symptoms have been greatly exaggerated; there may be some disturbance of function as exhibited in the stomach and intestines as an instance, but there is no pathology or disease of any tissue or organ.

Health Commissioner Dr. Copeland.

Mr. Chairman: Until we can impress it upon the Congress of the United States that this traffic has got to stop regardless of what the British Empire or anybody else may think about it, we won't get anywhere. We can cure these addicts at the hospitals, but association will take them back to the drug, and until we make it impossible for them to get hold of the drug we are going to fail to get anywhere.

CONCLUSIONS.

The special Committee on Drug Addiction, of which Dr. Edward B. Angell was chairman, reported a year ago as follows:

"The Committee is further of the opinion that drug addiction should be treated in a proper institution. It does not believe it feasible to treat these cases successfully in private practice or at a practitioner's office." As a result of the further study of the question, which the unusual opportunity of the past year afforded, we wish to emphasize the wisdom of the opinion expressed by the previous Committee, as above quoted. And we would add to it that the whole question of narcotic regulation and control, as far as the State law is concerned, may be simplified by the enactment of the thought embodied in the recommendations of the Angell Committee. In other words, it is the condemnation of the ambulatory treatment, which is defined as prescribing or dispensing narcotic drugs to be used by the addict for self-administration at his convenience. It does not prohibit the drug being personally administered by a physician. The present State narcotic drug law, known as the Whitney law, was framed with the idea of per-

mitting the ambulatory treatment of drug addicts. This law imposes upon the entire medical and pharmaceutical professions a mass of annoying and petty restrictions and requirements which were thought to be necessary in order to prevent the abuse of the ambulatory method of treatment, which so temptingly lends itself to questionable practices by addicts and others. It seems practically impossible for it to be used in good faith. This act, which legalizes the ambulatory treatment, has added twenty pages of law and rules and regulations. The latter may be added to from time to time, as provided for in Section 421, which says: "The Commissioner is hereby empowered to make all needful or helpful rules, regulations, rulings and decisions which, in his judgment, may be necessary or proper to supplement or effectuate the purposes and intent of this article, or to interpret or clarify its provisions, or to provide the procedure or detail requisite in his judgment to effectually secure the proper enforcement of its provisions, rules, regulations and decisions. When made and promulgated by the Commissioner, shall become rules, regulations, rulings and decisions of the department and, until modified or rescinded, shall have all of the force and effect of statute." And while the present Commissioner, Hon. Walter R. Herrick, and his efficient first deputy, Commissioner Sarah Graham Mulhall, are kind and considerate in all that relates to the medical profession, we believe that no such power should be given to any commissioner, and this law should be repealed. The great mass of reputable physicians, dentists and pharmacists who would never think of breaking any law have been inconvenienced by the necessity of familiarizing themselves with the technical requirements of two sets of laws and regulations (Harrison and Whitney) not in harmony, and have suffered in their rights and professional liberty of action unnecessarily. The Angell Committee recommended that no action be taken till the present law has had a fair trial.

We have had the fair trial, and the lesson taught by an intensive study during the past year has convinced us of the need of a new State narcotic drug law devoid of the numerous entangling technicalities and rules, regulations and requirements, and without the need of a registration fee. Now that the Harrison law has become effective, very effective, through recent United States Supreme Court interpretations, to which is added fifty pages of Treasury regulations, the Whitney law should be repealed and a substitute should take its place in harmony with the Harrison law and the year's experience. Such a law should not be framed for the benefit of a small number of physicians and druggists at the expense of all the rest (34 out of 1,491 druggists and 40 out of 8,100

physicians in Greater New York, from report of State Department of Narcotic Drug Control). It should fall into line with the Federal law, as well as with the enlightened views of the medical profession, by adopting the provisions of the Massachusetts and Rhode Island laws governing treatment of drug addiction. It should omit all unnecessary technical requirements, and most of those in the present law would be unnecessary in a law forbidding the ambulatory treatment or the prescribing or dispensing of narcotic drugs to addicts for self-administration. It should restrict the power of State officials to impose unreasonable burdens upon physicians, dentists and pharmacists in the shape of "regulations." It should recognize that the subject matter is a public health problem, to be dealt with by the departments of health of the State and municipalities. Finally, it should take into account the need of institutional treatment and the duty of the municipal subdivisions of the State to provide suitable care and treatment for addicts.

With the co-operation of the medical profession and securing ample provisions for the curative treatment of existing addicts, accompanied by vigorous law enforcement, by Federal and State agencies working in harmony to shut off the supply of narcotic drugs to all individuals except for legitimate medical purposes, there is no reason why drug addiction could not be entirely stamped out within a reasonable time.

We recommend:

1. That the ambulatory treatment of drug addiction, as far as it relates to prescribing and dispensing of narcotic drugs to addicts for self-administration at their convenience, be prohibited by law.
2. That heroin be eliminated from all medicinal preparations, and that it should not be administered, prescribed or dispensed, and that the importation, manufacture and sale of heroin should be prohibited in the United States.
3. That the bill introduced by Senator France, of Maryland, to provide aid from the United States for the several States in prevention and control of drug addiction and the care and treatment of drug addicts be approved, and that Senator France, chairman of the Committee on Public Health, be so notified.
4. That the Bureau of Public Health service of the Treasury Department be respectfully requested to continue the compilation of State laws and regulations relating to habit-forming drugs and bring them up to date.

Respectfully submitted,

E. ELIOT HARRIS, *Chairman.*

March 1, 1920.

REPORT OF THE SPECIAL COMMITTEE ON DRUG ADDICTION.

To the House of Delegates:

The Special Committee on Drug Addiction, appointed at the last meeting of the House of Delegates, begs to make the following report to your organization, in view of the developments of the year 1919-1920.

The report of the Special Committee, of which Dr. Edward B. Angell was chairman in 1918-1919, called attention to the working of the State law, which took effect February 1, 1919. It was stated that this law is "less burdensome to the physician and, as it stands today, less exacting in its requirements than the Federal law." The Federal law was described as "much more stringent, requiring, as it does, an annual inventory of drugs purchased and dispensed, as well as the maintenance of a record, for a period of two years, of the drugs used, its quantity, the name of the patient to whom dispensed and the date of the transaction."

The committee of last year has already called attention to the time and duplication necessary in the preparation of prescriptions. To this might be added the delay in the receipt of drugs for office, clinic and hospital work.

Dr. Angell's committee recommended the treatment of all drug addicts in institutions, believing that "it is not feasible to treat these cases successfully in private practice or at a practitioner's office." Attention was called to the fact that a law provides for the commitment of cases to the custody of an institution, also providing for the acceptance of voluntary patients by a properly qualified hospital.

This committee is deeply indebted to Dr. E. Eliot Harris for the work of investigation and research, to which he has devoted time and patience during the past year. During this period Dr. Harris has been chairman of the Committee on the Narcotic Drug Situation in the United States for the American Medical Association; of a Special Committee on Public Health for the five counties of Greater New York, and of the Committee on Narcotic Drug Legislation for the Medical Society of the County of New York. It is as a result of the investigations and findings of Dr. Harris confirmed by our own observations and experience in the city and State that we submit the following amplifications of Dr. Angell's report:

1. During the past year there has been an adaptation and co-ordination between the State and Federal laws. Further experience will increase this harmony as the provisions of the law grow more familiar, and there will be less misinterpretation and friction. We recommend dis-

cussion of ways and means to avoid the present delay in the receipt of the necessary drugs for office, clinic and hospital.

2. On the basis of observation and belief in the medical profession, as a whole, it would seem wise to recommend that doctors be left without interference in the use of drugs, but practice in good faith, remembering their obligation to their profession. But experience and study lead us also to recommend that doctors should never give drugs to patients for self-administration.

3. The present law calls for the care of drug addicts. But as yet we have no scientific classification of these unfortunates. We submit for consideration the classification proposed by Dr. Harris: (1) Addicts who can be classified as having a disease. It is well in this connection, however, to emphasize the fact that there is no pathology of drug addiction, merely a symptomatology and functional depression. (2) Correctional cases. Among such cases are gangsters addicted to cocaine and heroin. (3) Defectives and degenerates. Many of these are found under the mental tests to belong to the moron type. Both (2) and (3) should be disposed of by institutional care. (4) This class, perhaps small, is made up of those who perhaps through social or personal maladjustment have become weakened in their inhibitions. They can be treated by a wise and kindly practitioner by what can be called "moral suasion."

4. In view of the large amount of opium used in the United States, as compared with other countries, this committee recommends stricter government supervision.

5. With reference to legislation concerning veronal, trional, sulphonal and other coal-tar products, the committee deprecates legislation until further investigation gives us more definite facts. At present it would seem that the percentage is small.

6. In view of the lack of uniformity of the various State laws, this committee cordially supports the recommendation of Dr. Harris that there be a collection and classification of all State laws, court decisions, regulations, and methods of administering laws on Narcotic Drug Control, and that this be done either by the Government Health Service or by the Internal Revenue Bureau for the benefit of officials and others in the several States.

Respectfully submitted,

W. MEDDAUGH DUNNING, *Chairman*.
O. PAUL HUMPHSTONE.
JAMES KNIGHT QUIGLEY.
GROVER W. WENDE.

March 1, 1920.

**REPORT OF THE SPECIAL COMMITTEE
TO CONSIDER ECONOMIC METHODS
OF CARING FOR PUBLIC HEALTH.***To the House of Delegates:*

The problem of the economic value of caring for public health is an exceedingly difficult one. The evolution of the practice of medicine has resulted in a condition, the continuance of which, if scientific and successful results are to be achieved, is logically impossible.

There are two departments of medicine in existence today—that which is designed to prevent disease and that which is curative. The first is within the province of the State and its scope is constantly broadening. The second is a duty that rests with the individual physician.

It may be considered as axiomatic that any measures inaugurated by the State which tend to lower the standards of medical practice are directly inimical to the welfare of the State itself, while every measure that increases the efficiency of the individual physician by reason of that fact is in proportionate ratio a gain for the State. As the lessening of morbidity and the diminution of the ratio of mortality is of economic importance to the State, it becomes a function of the State to extend the sphere of preventive medicine to its widest possible limits. As the State exercises supervision over the education of the physicians, constantly raising the necessary standard of attainment requisite to permit him to practice his profession, it is an equal obligation on the part of the State to secure for him every opportunity to conduct his practice in harmony with the highest scientific requirements. It requires no argument to demonstrate that the internist to successfully determine the origin and nature of disease and to institute correct measures for its treatment, must call to his aid those engaged in various medical specialties. It is not so evident that the specialist to whom large numbers of patients now come in the first instance has neither the facilities, instrumentation nor time necessary to make the comprehensive general examination which is essential to an intelligent understanding of disease even when it is manifested in the organ to which he gives his special study and care. The most striking instance of the difficulties which are met in the application of correct therapeutic principles is in diseases of the eye. The patient who finds himself losing his sight will naturally consult an ophthalmologist. He will expect the ophthalmic specialist to take all of the necessary measures to prevent the oncoming of blindness; yet, except for the purely mechanical or surgical measures which he is able to institute, he can have almost no part in the essential therapeutic means which must be applied for the relief of the more serious or deep-seated diseases. If the difficulty present an optic atrophy, then the condition of the nervous system must be studied. Is the retina or the choroid involved? The source of the trouble may be leucic, or tubercular, or metabolic, or it

may originate in a remote infected focus. A paralysis of the ocular muscles may be cerebral, and dependent on any one of a variety of causes. Should the disease be malignant, the existence of other evidences of malignancy must be sought. It may be scorbutic, when the dietetic lack must be discovered. In practically every case which is not traumatic the ophthalmic specialist, should he confine himself to the limitations of his chosen field, is wholly unable to prescribe intelligently for the large number of cases which are daily seeking his help without calling for outside aid. As a matter of fact, he does seek such supplementary pathological and diagnostic assistance as he requires. But that there is no existing medium through which such essential supplemental information can be always secured makes an impossible state of affairs. What is true of ophthalmology is true to an almost equal degree of every other specialty in medicine. It is evident, then, that as the conscientious physician cannot unaided meet his full responsibility to his patient some method must be devised that will enable him to do so.

It would be impossible for any committee to make judicious recommendations by which the obvious needs in this particular could be carried into effect without a much fuller knowledge of the exact conditions obtaining throughout the State than is now available. A knowledge of the number of hospitals and the degree of efficiency that they have attained and their approximation to a standardized ideal is of first importance, as it is to the staffs of existing hospitals that we should look for the establishment of diagnostic community clinics. The extent of preventable and of curable disease should be known and many other facts should be secured and correlated in order that proper deductions might be drawn before any plan could be proposed for the establishment of proper relation between the medical profession and the public. The more imperative needs are not for the very poor, and it is not desirable that efforts be made for increasing the number of charitable institutions, but a genuine need exists for the establishment of pay clinics in which group diagnoses could be secured at fees commensurate with the means of the patient and through which the physician in charge of any case would be enabled to secure correct treatment without danger of losing control of his patient.

In order that the responsibility of the State towards its people in providing such facilities as will enable every practicing physician to secure such necessary diagnostic aids as will enable him to give to his work its highest efficiency, it is recommended that a committee be appointed to prepare a suitable memorial to present to the next Legislature requesting the appointment of a committee by the Legislature empowered to investigate the needs outlined and to devise means through which they might be carried into effect.

F. PARK LEWIS, *Chairman.*
DWIGHT H. MURRAY
PARKER SYMS.

REPORT OF THE COUNSEL.

December 31, 1919.

To Dr. Grant C. Madill, as President of the Medical Society of the State of New York; to the Council; and to the House of Delegates of the Medical Society of the State of New York.

SIRS:

I have the honor to transmit to you herewith my annual report as the legal representative of the Medical Society of the State of New York for the year 1919.

During the past year twenty-seven cases have been finally disposed of, and juries have found verdicts against the defendants in two cases; one of the cases involved the claim of failure of diagnosis and improper treatment of a fracture of the thigh, and the other the leaving of a broken needle in the abdominal wall of a patient after the operation. Notice of Appeal to the Appellate Division has been served in the former case, and a motion for a new trial has been made but not yet heard in the other. I have no doubt of the successful final termination of both of these cases. I am frank to add that I believe the Trial Judge will set aside the verdict in the needle case.

There were thirty-nine new actions brought during this year, but this number does not contemplate a situation where husband and wife bring separate actions against the same defendant in the same case. The real number of cases brought would therefore be quite a few in excess of this number. The number of new cases has been about the same for the past four years.

Of the number of cases tried in court during the past year, five have been those in which it is claimed some material has been left behind after an operation. I refer to this, because this is a very much larger proportion of this class of cases than usually occurs. It may be added also, that this class of litigation is getting into the hands of a different class of lawyers. While formerly malpractice cases were confined in a considerable degree to lawyers of small practice and of not particularly high standing, this condition seems to be changing.

Again it affords me no little pleasure to thank the unselfish, distinguished members of your profession in all parts of the State who, without recompense, have been always willing, upon short notice, to come into court and tell the truth for the benefit of their fellow practitioners. The feeling of jealousy in communities is absent when the time comes for honest effort on the witness stand.

The following is a list of cases begun during 1919:

1. This action was begun in one of the remote counties of the State. It is claimed that a lumber man was struck by a falling log which fractured both bones of his lower right leg, and that the defendant was negligent in not properly setting the same, and in not using

proper appliances, and for that reason the plaintiff was caused to suffer great pain, and the bones had been allowed to override, and that his leg had been shortened. He claims that he has been permanently injured and that he is informed he will have to have a second operation.

2. This plaintiff, a woman, complains that the doctor failed to give her proper attention incident to the birth of a child. She claims that when she called him to come to her bedside he only remained a few moments and that he did not give her the attention that she should have had, with the result that she claims she had to secure other assistance at the time of childbirth, and that the child was born dead while it should have been a living child.

3. This action was brought by a guardian *ad litem*. The gravamen of the case is that the child sustained a fracture of the left arm; that the defendant neglected to properly set the fracture; that blood poisoning resulted; and that the child is permanently disfigured and disabled.

4. This action was brought in the Municipal Court by an infant in one of the remote cities of the State. It involved an operation for varicocele. The plaintiff avers that the doctor was negligent in that the incision of the scrotum was not properly closed and held together. He claims that the doctor should have sutured the skin where the incision was made so as to prevent infection and discharge and flow of blood.

5. This action is based upon an improperly performed operation for a prolapsed kidney. The woman plaintiff claims that the incision into the body was improperly made, and that by reason of the carelessness and negligence of the operator she was compelled to go to another hospital and have a second operation performed.

6. The plaintiff in this action claims that she employed the defendant to attend her at childbirth for an agreed sum, and that she was to be confined in a hospital; that the negligence of the defendant was in improperly caring for her after the confinement so as to cause injury to her breast; and that by reason of his negligence an operation had to be performed on her breast because it became abscessed. Plaintiff claims that she was caused unnecessary and excessive suffering, and that by reason of the negligence of the doctor she has had to have other surgical procedure performed.

7. The foundation of this case is furnished by a claim that the plaintiff while at one of the large hospitals in New York City was improperly treated by the defendant incident to the repair of a fracture of the left arm at the elbow. It is also claimed in the complaint that the defendant said that he would guarantee a cure and that the arm would be as good as it was before she sustained the fracture. It appears that the arm had previously been set by another doctor.

8. The defendant in this action is sued because of the alleged treatment of the plaintiff's finger improperly; that it became affected by carbolic gangrene, and that the finger of the patient had to be amputated.

9. The defendant in this action is charged with treating the plaintiff's hand in an improper manner, so that the hand of the patient became seriously and permanently crippled, it is claimed.

10. In this case your counsel only acted in an advisory capacity. It appears that the doctor undertook to collect his bill in the Municipal Court, and that a counterclaim for malpractice was set up. The defendant applied to the Medical State Society for defense and the necessary advice was given. The doctor collected his bill.

11. This case is one which is twofold. An action was brought against two different doctors by the same plaintiff. Notice of appearance was served in both cases by your counsel, but no complaint has ever been served on me. The next move on the part of counsel will be to move to dismiss for failure to prosecute the action.

12. This action was really begun by the plaintiff against two other doctors in 1918. When this case was about to be reached for trial the plaintiff in the former action visited the defendant in this action and subpoenaed him as a witness. This defendant advised the process server that he would have to be a witness against him because he thought he was wrong; thereupon, the plaintiff in the other action began one against this defendant also, but the Statute of Limitations had run against the action. I believe none of the three doctors sued in this case will ever have to appear in court.

13. It is claimed in this case that a man who had been injured on a railroad and received severe injuries to his head, side and arm, was carelessly treated by the two defendants in the action, one of whom I represent. It is contended that incident to the treatment of a scalp wound a piece of rubber drain was allowed to remain by both of these defendants. The case was tried and the complaint dismissed.

14. The plaintiff in this action is an administrator, and brings the action for the death of the plaintiff's intestate because, according to her statement, the defendant was negligent in the treatment of the infant who, she claims, subsequently died through the negligence of the doctor. The case involved the treatment of the ear.

15. This action is brought by a woman, who claims that the defendant was negligent in that he failed to diagnose a fracture of the thigh and give her proper treatment. The patient refused to allow the doctor to examine her after she had fallen on an icy sidewalk. It appeared on the trial of the action that the plaintiff had remained seated in a chair for upwards of six weeks, and finally had a good result from her treatment. This case has been tried and the complaint dismissed.

16. The doctor in this case applied for defense after receiving a threatening letter to which no attention was paid. As no action has been brought, it is impossible for counsel to state in what respect the patient claims that the doctor was negligent.

17. This action was brought by an administrator on behalf of a woman who, it is claimed in the plaintiff's complaint, lost her life by reason of the negligence of the doctor attending her in confinement. The husband contended at the trial of the action that the doctor did not respond promptly to calls made, and that he acted too hurriedly. This case was tried and the jury disagreed ten to two in favor of the defendant. I believe that case will never be tried again.

18. In this action it is charged that through the negligence of the doctor a young woman, who was suffering from some abdominal trouble, was burned by means of the application of an electrical appliance. She asks in her complaint that the doctor pay her \$15,000.

19. In this case your counsel represents two separate defendants. The case involves a claim for damages on the part of the plaintiff in the sum of \$10,000 against a hospital and others. It is claimed that the plaintiff was improperly placed in an institution for the insane when, as a matter of fact, he claims that he was at the time actually sane, and that the defendants, whom I represent, were guilty of a conspiracy to put him there.

20. The administrator of the estate of a deceased infant is the plaintiff in this action brought against two doctors, one who began the treatment of the infant child, and the other one who completed it. It is claimed in the complaint that both of the doctors were guilty of negligence, because they had failed to discover and to remove foreign matter in the throat of the child, and that the child died by reason of their negligence. This action was on trial, and in the midst of the plaintiff's case the theory of the plaintiff became somewhat changed, and the case was stopped in the midst of the

trial and, I believe, will not be resumed, as the plaintiff has no claim at all.

21. The doctor who was sued in this case is charged by the plaintiff with having failed to diagnose what was really a fracture of the shoulder, because the plaintiff claims that the doctor did not make a proper and thorough examination.

22. The basis of this action is an X-ray burn, which it is claimed that the young woman plaintiff received when she went to the defendant for treatment with the X-ray incident to a growth which she says, among other things, was to prevent its becoming malignant. She also claims that after she was burned that the doctor did not properly treat her for the burn.

23. The patient's toe is the foundation of this action. It is claimed that the doctor after amputating the toe improperly permitted the patient to leave the hospital, that blood poisoning set in, and that by reason thereof the leg had to be amputated. The patient had diabetic gangrene and, so far as I can see, there is not a semblance of righteousness in the claim against the defendant.

24. During the present year two actions were brought arising out of the same transaction. The second one because of the death of the plaintiff, where it is claimed that the doctor who treated this patient burned him, and as a result of this burn he became diseased and eventually was compelled to have his leg amputated, and subsequently died. This second action was, of course, brought in the name of the administrator.

25. Your counsel represents one of two defendants in this case, the other one being represented by the lawyers for an insurance company. The negligence claimed consisted in the improper treatment of a broken arm by these doctors acting at different times, and that the damage consisted in an injury to the muscles about the fractured part caused by too tight a bandage. This action was begun in Erie County where neither of the defendants lived, and was subsequently transferred to another county where both defendants reside.

26. This is a husband and wife's case and two different doctors are being defended by your counsel. The wife charges that she was suffering from an "affected appendix and broken gall bladder." Her contention is that the doctors negligently failed to entirely remove the gauze packed in the abdomen and it was allowed to remain there for some time. This case will hardly be reached for trial this year.

27. In this case I represent one of two defendants, an insurance company represents the other. The physician I represent seems to have been only consulted in the case. The negligence of which the plaintiff complains is that the wife of the plaintiff being pregnant, she was examined and a diagnosis was made of a dead child, and she claims that the doctors improperly made an effort to induce labor, and that the wife did give birth to a living child. Wrong diagnosis and improper treatment is her contention.

28. This is also a husband and wife's case. The complaint in this action does not state exactly what is claimed, but the general allegations are that the defendant unskillfully conducted himself, so that the body of the plaintiff's wife became infected, and that he failed to properly treat the infection and refused to call another physician in consultation. The wife asks for \$50,000, and the husband for \$10,000.

29. No action has been begun yet against the proposed defendant in this case. An application for defense was applied for because of a letter written to the Secretary of the Society from an out of town attorney. I have written to the lawyer and to the doctor and have offered my services.

30. This action was brought by the administrator of a patient who, it is claimed, employed the defendant to treat him for neurasthenia, sleeplessness and nervousness. The plaintiff claims that the doctor injected large quantities of narcotics and morphine into

his arm, and that the quantities were excessive and dangerous, and that by reason of this improper treatment the patient became ill and, it is charged, died by reason of the injections.

31. The plaintiff in this action, by her complaint, says that her left arm having been severely cut and lacerated, and believing that the defendant in this action was a skilled physician, she secured his help to cure her, and that he promised and guaranteed her that her lacerations and injuries would be completely cured and her arm restored to its normal state; and she contends that in his treatment the doctor was unscientific, negligent and careless, and as a result she claims that her arm has become shrunken and the fingers of her left hand are contracted and bent; and she asks damages in the sum of \$10,000.

32. The plaintiff in this action claims that he employed the defendant as a physician to examine him and ascertain as to whether or not he had syphilis, and that the doctor undertook to do so; but the plaintiff claims that he was negligent in his examination and treatment, in that on or about the date mentioned in the complaint he improperly injected salvarsan into the plaintiff's arm before he had taken a Wassermann test, and he informed the plaintiff that he actually did have syphilis. The plaintiff claims that he never did have syphilis; that the doctor was negligent not only in the examination, but in the improper and unskillful method of administration of the remedy; and that by reason thereof his health is ruined.

33. This action was brought by an administrator to recover for the death of the plaintiff's intestate. It involves, so the plaintiff says, the improper treatment by the doctor of a throat affection, and that because the treatment was wrong the patient died.

34. The question involved in this case is one of the examination of the plaintiff, and especially of his head and face, following an accident which the patient had suffered. It was contended that bones of the patient's face were fractured and that the fracture was not discovered. I am informed that this action was settled for a very small amount.

35. A heavy beam of timber accidentally slipped and fell upon this plaintiff and his left leg was broken. Plaintiff says that he went to see the defendant and he undertook the patient's care, but that he unskillfully, carelessly and negligently set and treated the plaintiff's leg, and failed to properly reduce, set and treat the fracture, and his leg is now and always will be weak, deformed and short. The Statute of Limitations had run against this claim, and I presume we will hear nothing further from them.

36. This is a husband and wife's case, both for \$10,000. In the opinion of the attorney, both the wife and husband seem to have been equally injured. The woman plaintiff claims that a button had been inserted by the defendant some years ago, and that by reason of the presence of this button a surgical operation had to be performed; but that in the performance of the operation, by use of improper methods and unclean instruments, the wife claims that she was injured in her health and constitution. The statements contained in the complaint are so far from the truth that it is very doubtful if this case will ever be brought to trial.

37. Husband and wife both bring action charging that the plaintiff employed the doctor to look after the wife at childbirth, and that while she was in the hospital he performed an operation upon her, which was done so carelessly that a foreign substance was left behind, from which substance she became ill and was compelled to undergo a second operation by reason of the negligence of the defendant. The Statute of Limitations had run in this action, and as soon as the answer was interposed both actions were discontinued.

38. A summons was served in this action and I

replied by serving a demand for a complaint. The complaint has never been served. The time to answer it has expired. I have talked with the attorney for the plaintiff in this action, and I believe the action will not proceed further. The nature of this action is not stated, of course, as no complaint was ever served.

39. The plaintiff, a supervising nurse, claims that the visiting surgeon began a curettage without authority to operate. She claims she wanted the house surgeon, and that therefore the visiting surgeon was guilty of constructive assault.

Recently I have been consulted by the Secretary in reference to the replenishment of the Society's treasury, made necessary by continuing deficit, and it appears that an emergency exists which warrants an assessment upon each member. Such provision must be made upon the approval of the House of Delegates. While the expenditure for the Legal Department is a fixed charge, expenditures in other directions are not constant; therefore, it is not extraordinary that the tremendous added cost of production in every line of endeavor should affect the efforts of the State Society. For the Legal Department alone the expenses have increased more than one hundred and ten per cent. and, for that reason, during the past year I have paid out of my salary, more than one-third of my income, in order to carry on the work.

With this year having completed twenty years of active service on behalf of physicians and surgeons of this State in the defense of malpractice cases, it may not be out of place to furnish the members of the Medical Society of the State of New York with some of the results that have been accomplished during that time.

In the first place, the first case which I tried was conducted while I was attorney for the State and County Medical Associations. The defendant in that case is now dead. The action was tried on the 14th and 15th days of December, 1899, in the Municipal Court, New York City. The doctor had sued for his bill and was met by a counter-claim of negligence in the performance of an operation for the draining of a gall bladder and removal of an appendix. After the formal proof of the value of the services, I was confronted with the cross-examination of the young woman patient, and which of us felt the worse about it I do not know, but I do recall that her face and mine were about the same color. This case required a very careful study of the contents of the female pelvis and abdomen, and the questions I was compelled to ask and the answers which she was compelled to give well-nigh overwhelmed us both.

Since that time and up to the 31st of December, 1919, I have had come before me eight hundred and eleven malpractice cases, I believe involving practically every known fracture of the human body, and the leaving behind of surgical instruments and varieties of dressings. The cases have actually gone from the removing of a wrong toenail to the leaving of a rubber

tube beneath the scalp. Of this number, four hundred and one cases have been actually disposed of in court, and the remainder abandoned, or are still pending. During this time claims against defendants have aggregated upwards of twelve million dollars. There has been actually paid to plaintiffs less than six thousand dollars. Two cases have been settled with my consent; I am informed that three others have been settled without my consent. Only in two instances have I ever been asked by a member of the State Medical Society where he was to get his money for testifying on behalf of a brother practitioner.

Finally, I would say that the year 1919 has been most satisfactory; that the cases are now growing slightly less in number, but more and more difficult to successfully defend, requiring of your Counsel continuing examination of law and the study of medicine, surgery and anatomy especially. I have had the continuing enthusiastic co-operation and support of every member of the Society whenever I have been required to call upon him in an emergency at the time of trial. Suggestion and advice have been invaluable and freely given.

All of which is respectfully submitted.

JAMES TAYLOR LEWIS, *Counsel.*

REPORT OF THE COUNCILOR OF THE FIRST DISTRICT BRANCH.

To the House of Delegates:

The Annual Meeting of the First District Branch was held in Yonkers on October 15, 1919.

The morning session was devoted to a short business session and to listening to addresses by Dr. Joseph B. Hulett, president of the Branch; Dr. Grant C. Madill, president of the Medical Society of the State of New York; Drs. Albert T. Lytle and John P. Davin.

After a luncheon provided for the members by the Committee on Reception, the meeting reconvened for the afternoon session, which consisted of papers by Drs. Franklin Barrow, Edward L. Keyes, Jr., J. Fielding Black, W. Medaugh Dunning and Edwin G. Ramsdell.

Respectfully submitted,

JOSEPH B. HULETT, *President.*

March 1, 1920.

REPORT OF THE COUNCILOR OF THE THIRD DISTRICT BRANCH.

To the House of Delegates:

There have been the regular meetings in the different societies and some societies have held special meetings. Although scientific subjects have received due consideration and discussion at these meetings, it has been very apparent that the subject of Compulsory Health Insurance has

crowded all other subjects into the background. The opposition to it has been practically unanimous and the enthusiasm to combat it is tremendous.

During the time the Special Committee of the State Society was investigating Compulsory Health Insurance, this enthusiasm manifested itself in the formation of "Leagues of the Medical and Allied Professions," and should these leagues never do anything more I believe they have justified their formation by the better understanding of Compulsory Health Insurance which they have given to the general public.

As far as I have been able to ascertain, the acceptance by the House of Delegates of the majority report of the Special Committee to investigate Compulsory Health Insurance has met with universal approval.

The Annual Meeting of the Branch was held at Albany, October 9, 1919, and the program, which consisted of papers by Drs. S. Adolphus Knopf, New York; Herman C. Gardinier, Troy; James N. Vander Veer, Albany, and Nelson K. Fromm, Albany, was received with much interest.

Much credit is due to the Medical Society of the County of Albany for the excellent program of clinics presented on various subjects, and for their excellent arrangement and management.

Respectfully submitted,

LUTHER EMERICK,

President.

March 1, 1920.

REPORT OF THE COUNCILOR OF THE FOURTH DISTRICT BRANCH.

To the House of Delegates:

On account of absence from the State on military duty the President of the Fourth District Branch was unable to visit the County Societies during 1919.

The Annual Meeting was held at Plattsburgh on November 18, 1919, with a very good attendance considering the severe weather and the lateness of the annual meeting.

The program was as follows:

President's Address: "Need of a Local Laboratory in Northern New York."

Address by President of the Medical Society of the State of New York, Grant C. Madill, M.D.: "Some Activities of the State Medical Society."

"Social Service for the Insane," Richard H. Hutchings, M.D., Utica.

Address by John R. Ross, M.D., Dannemora.
"The County Laboratory," Warren B. Stone, M.D., Schenectady.

"Military Training of Medical Officers," T. E. Darby, Lieut.-Col., U. S. A.

"Psychoneuroses of War," Charles R. Payne, M.D., Plattsburgh.

"School Health Service in New York State,"
Franklin W. Barrows, M.D., Albany.

"Health Insurance," E. MacDonald Stanton,
M.D., Schenectady.

On account of the removal of Richard H.
Hutchings, M.D., the First Vice-President, from
the District, E. MacDonald Stanton, M.D., was
elected First Vice-President.

John R. Ross, M.D., was elected Second Vice-
President.

Luncheon was served by the Clinton County
Medical Society between the morning and after-
noon sessions.

A committee was appointed to assist in the
establishment of a local laboratory for the benefit
of the profession in the Northeastern Counties.

Respectfully submitted,

T. AVERY ROGERS,
President.

March 1, 1920.

REPORT OF THE COUNCILOR OF THE FIFTH DISTRICT BRANCH.

To the House of Delegates:

The Annual Meeting of the Fifth District
Branch was held October 1, 1919, at the Custodial
Asylum, Rome, N. Y. The morning session was
opened by an address of welcome by Mayor H. C.
Midlam, of Rome.

Grant C. Madill, M.D., of Ogdensburg, Presi-
dent of the State Society, spoke on the "Welfare
of the Medical Profession."

"The Psychology of Imagination" was the sub-
ject of the address of the President of the Branch,
G. Massillon Lewis, M.D.

The election of officers followed: William D.
Alsever, M.D., of Syracuse, was chosen Presi-
dent; Charles Bernstein, M.D., of Rome, Vice-
President; George William Miles, M.D., of
Oneida, Secretary; Nelson O. Brooks, M.D., of
Oneida, re-elected Treasurer.

Dr. Charles Bernstein, Supt. of the Custodial
Asylum, entertained the Branch as guests at a
delightful luncheon.

At the afternoon session, John R. Williams,
M.D., presented the subject, "Gangrene Asso-
ciated with Diabetes."

Warren Britt, M.D., "Blood Transfusion."

Walter H. Kidder, M.D., "Health Insurance
and State Medicine."

William D. Alsever, "Compulsory Health In-
surance."

The session adjourned about five o'clock and
many complimentary remarks were made, that it
was one of the most interesting and profitable
meetings of the Branch.

Respectfully submitted,

G. MASSILLON LEWIS,
President.

March 1, 1920.

REPORT OF THE COUNCILOR OF THE SIXTH DISTRICT BRANCH.

To the House of Delegates:

The Annual Meeting of the Sixth District
Branch was held at Owego on October 7, 1919.
The attendance was 127, or nearly one-third the
number of members in the district. The program
was excellent and every writer presented his
paper. Great interest was shown by the mem-
bers on the subject of Compulsory Health Insur-
ance, and after a discussion on the subject the
meeting by a unanimous vote went on record as
opposed to Health Insurance in any form, and
the delegates were instructed to work against its
passage.

The following officers were elected: President,
Leon M. Kysor, M.D.; Hornell; First Vice-
President, John M. Quirk, M.D., Watkins;
Second Vice-President, Willets Wilson, M.D.,
Ithaca; Secretary, Willis S. Cobb, M.D.,
Corning; Treasurer, Stuart B. Blakely, M.D.,
Binghamton.

The County Societies throughout the district
are generally in a flourishing condition. During
the year there has been a gradual return to
practice of physicians who have been in military
service, and there has been a readjustment of
medical practice to much the same conditions as
existed before the war.

Throughout the district there has been a ten-
dency of physicians in the smaller villages and
rural communities to move to the county seats
and larger places. The extension of improved
highways and the general use of the automobile
has made it possible for these rural communities
to secure adequate medical attention during the
warmer months, but the severe winter we are
going through has compelled a return to horse-
drawn vehicles and slow methods of communica-
tion. This movement of physicians to the larger
centers of population is an economic proposition
which is bound to continue and can only be met
by an extension of hospital service in easily
accessible localities and a further development
of the good roads system. The present year has
found all the hospitals in a crowded condition
and needing a general extension of their service.
The development of the good roads system will
also aid in rendering efficient service to outlying
districts at nearly all seasons of the year.

The next annual meeting of the Branch will be
held at Hornell on October 5, 1920.

Respectfully submitted,
R. PAUL HIGGINS, *President.*

March 1, 1920.

**REPORT OF THE COUNCILOR OF THE
SEVENTH DISTRICT BRANCH.***To the House of Delegates:*

The conditions existing in the Seventh District Branch are very satisfactory.

The county societies have held regular meetings, with good attendance and interesting programs.

The annual meeting of the Branch was held in Rochester, October 2. The papers were well presented and brought forth much discussion.

There seems to be growing interest in County and Branch officers. Respectfully submitted,
March 1, 1920. JOHN H. PRATT, *President*.

**REPORT OF THE COUNCILOR EIGHTH
DISTRICT BRANCH.***To the House of Delegates:*

On account of the activity in the Legislature with reference to Health Insurance during the past year, the tension in the medical profession of the Branch has been very high. Notwithstanding repeated admonitions to become thoroughly familiar with the subject and probably on account of war conditions, the profession neglected so to do, and even today there is a very great misunderstanding with regard to the whole subject. The urgency of the situation in the early part of the year gave rise to special meetings of each of the County Societies, at which time the situation as it had then developed was presented to the membership. An effort was made at the Annual Meeting in September to present this topic from all points of view by speakers having expert knowledge, but unfortunately circumstances prevented the full accomplishment of the end desired.

The County Societies hardly meet often enough so that the members get together sufficiently often with the officers to become familiar with matters of general interest to the profession; many members, owing to unavoidable circumstances, not getting to meeting oftener than once in two years. It would be advisable for County Societies to have four or more meetings a year held at different points in the county, so that all the members might at least become familiar with the affairs of the profession while they are still matters of importance and require attention. Such frequency would also permit the early induction into membership of desirable men settling in each of the counties. In regard to the membership, the Branch still holds a high percentage of desirable physicians.

The officers of the County Societies should be encouraged to forward for publication in the JOURNAL the transactions of their meetings, which should be sufficiently full so that absentees may have an opportunity to keep posted with regard to County Society activities.

Respectfully submitted,
March 1, 1920. ALBERT T. LYTLE, *President*.

Medical Society of the State of New York**HOUSE OF DELEGATES**

The regular meeting of the House of Delegates of the Medical Society of the State of New York was held in the New York Academy of Medicine, New York City, Monday, March 22, 1920, at 3 P. M.

Dr. Grant C. Madill, Ogdensburg, President, in the Chair; Dr. Edward Livingston Hunt, Secretary.

The President called the meeting to order and stated that the first order of business was roll-call by the Secretary.

The Secretary stated that the Council had passed a resolution that the roll-call at the first session of the House of Delegates should be dispensed with, but that the roll-call would be called immediately preceding the election of officers on Tuesday morning. He therefore moved that the calling of the roll be dispensed with at this time. Seconded and carried.

THE PRESIDENT: The next in order is the reading of the minutes of the previous meeting.

THE SECRETARY: These minutes were published in full in the JOURNAL.

It was moved and seconded that the minutes be approved as published. Carried.

It was moved that the minutes of the special meeting held in Albany be dispensed with. Seconded and carried.

THE PRESIDENT: Next in order is the report of the President. The report of the President has been published in full and I think that each delegate has the report.

It was moved that the reports be received and taken up as printed. Seconded and carried.

Dr. Dwight H. Murray moved that the reports be referred to the proper committee. Motion seconded and lost.

Dr. Joseph L. Bendell moved that the President's report be referred to a special committee for consideration. Seconded and carried.

THE PRESIDENT: I will appoint as this committee Drs. George W. Kosmak, Chairman; Albert T. Lytle, Frederick H. Flaherty, J. Bion Bogart and Walter H. Kidder. The next in order is the consideration of the report of the Secretary. In complying with the by-laws I will refer to the committee just appointed all of the reports, the committee to report back.

The next in order will be the report of special committees.

Dr. Henry S. Stark suggested that the procedure be followed in accordance with the order of business as outlined in the Constitution.

Dr. Dwight H. Murray, Syracuse, moved that the President's report be referred to the Committee of the Whole. Seconded and carried.

THE PRESIDENT: I will appoint Dr. Eliot Harris as Chairman of the Committee of the Whole and Dr. Edward Livingston Hunt as Secretary.

The House of Delegates thereupon resolved itself into a meeting of the Committee of the Whole.

Dr. HARRIS: Gentlemen, the President's report is before you. I will ask the Secretary to read it.

Dr. Wendell C. Phillips suggested that the Secretary read only the recommendations contained in the President's address.

The Secretary read as follows: "Extension of the activities of the Society demands increased labor on the part of the officers of the various standing and special committees. The chairmen of the various committees have always willingly and efficiently performed their duties at the expense of much time and actual cost. The members of this Society are mostly engaged in the active practice of their profession, and it is difficult for them, at all times, to give proper attention to the duties of their offices. It does not seem just to increase the

work that has already been thrown upon these committees.

"That the Society may expand its activities, co-ordinate the functions of the various standing committees and increase its usefulness both to the public and the profession of the State, I recommend the appointment of an executive secretary, at a salary sufficient to secure a capable and efficient officer."

Moved and seconded that the recommendation of the President be adopted. Carried.

The Secretary then read the following from the President's report:

"One of the purposes of the Medical Society of the State of New York, as expressed in Article I. of the Constitution, is to enlighten and direct public opinion in regard to the great problems of State medicine. It is my opinion that greater efforts should be made to acquaint the public with the important problems of State medicine which exist today. There is, I believe, a demand on the part of the profession of the State, both within and without this Society, for more effectual means to inform the public on legislation pertaining to public health. The public is vitally interested in health questions. . . .

"While the enlightenment of the public on medicinal matters is one of the fundamental purposes of this Society, no special means have been employed to perform this function. I would therefore suggest that there be appointed a committee whose duty it shall be to disseminate to the officers of the County Society information pertaining to public health matters."

DR. HARRIS: Will the President discuss that recommendation?

THE PRESIDENT: I have given all the reasons and arguments I have in favor of this in the report. I have nothing to add.

Dr. Winter moved that the subject matter of this recommendation be considered a part of the duties of the Executive Secretary.

After discussion the President stated that it would simplify matters if it were dropped and the matter made a suggestion.

Dr. Phillips expressed his willingness to withdraw the motion.

DR. HARRIS: The President asks that the matter be dropped. If the Committee of the Whole are in favor of that, they will please signify by saying aye; opposed, no. Carried.

The Secretary then read the following from the President's report:

"The present income of the Society is not sufficient to enable it to carry on any increase in its activities. The small surplus in the hands of the Treasurer and the imperative need of extra outlay will soon bring about an exhausted treasury. The added cost of every department of effort and the expense incurred by the appointment of special committees makes necessary additional income. To economize by curtailing any of the present work would, in my judgment, be bad policy. The work of the Society should be expanded, and not contracted. To broaden the scope of the efforts of the organization, it is obvious that there must be an increase in income. I would therefore recommend that Article 7, Section 2, of the Constitution be amended so as to read, 'The State annual per capita assessment shall be \$5 and shall be collected by the county treasurers at the same time and as part of the county dues, and shall be remitted to the State Treasurer by the treasurer of each county society on or before the first day of June of each year.'"

It was moved and seconded that the question be discussed. Motion lost.

The Secretary read the following from the President's report:

"At the annual meeting of the Society in 1917 the following resolution was introduced, seconded and

carried: 'That the Committee of the Whole recommend to the House of Delegates that a special committee be appointed to make a revised draft of the present Workmen's Compensation Law, which revised draft shall be submitted at the next annual meeting of the House of Delegates of the Medical Society of the State of New York, or a special meeting called for the purpose thereof.'

"A committee was appointed by Dr. Lambert, President. There is no record of a report of this committee at any annual or special meeting. I believe that another committee should be appointed to consider this resolution."

Moved and seconded that the recommendation be adopted. Motion lost.

DR. HARRIS: The Committee of the Whole would like to report that they have recommended the adoption of the recommendation as to the executive secretary as recommended by the President.

It was moved that the report of the Committee of the Whole be adopted. Seconded and carried.

Thereupon the Committee of the Whole arose and the President resumed the chair.

THE PRESIDENT: The next business is the report of the Council.

It was moved that the Committee be discharged and the report be referred to the House of Delegates. Seconded and carried.

DR. KOPETZKY: I move its adoption as printed. Seconded and carried.

THE PRESIDENT: The next in order is the report of the Secretary.

DR. KOPETZKY: I move that the Committee be discharged from the consideration of this report and that it be taken up by the House of Delegates. Seconded and carried.

THE PRESIDENT: What is your pleasure as to the report of the Secretary?

DR. KOPETZKY: I move the adoption of the Secretary's report as printed.

THE PRESIDENT: The next in order is the report of the Treasurer.

DR. HARRIS: I move that the Committee be discharged and that the House consider the report. Seconded and carried.

It was moved and seconded that the Treasurer's report be adopted as printed. Seconded and carried.

THE PRESIDENT: The next in order is the consideration of the reports of standing committees. The first to be considered is the report of the Committee on Scientific Work.

Dr. Harris moved that the Committee be discharged from consideration of this report and that the House consider it. Seconded and carried.

DR. WINTER: I move that the report be adopted as printed. Seconded and carried.

THE PRESIDENT: The next is the report of the Committee on Legislation.

Dr. Kevin reported that one of the bills had been reported out of committee by the Assembly and has been passed to third reading; that the Osteopathic Bill was introduced March 8th and there is no indication yet as to when there would be a hearing. There will be a hearing on the Chiropractic Bill tomorrow afternoon (March 23d). Dr. Kevin also stated that since it was impossible to expect a large delegation at the hearing, he had made the best arrangement possible; that the various medical societies would be represented, and that, in addition, the Chairman of the Committee, Senator Burlingame, had stated that he would give an opportunity for further hearing if the present hearing was not adequate. Dr. Kevin also expressed his approval of the suggested modification of the Workmen's Compensation Law as read by Dr. Delphey.

DR. KOPETZKY: The report of the Committee on Legislation is second to none before this House of Dele-

gates. I move that the Committee appointed be discharged from its consideration and that this body go in Committee of the Whole to consider the report of the Committee on Legislation.

Dr. Kevin stated that he did not think that this was wise; that there was just as much fear of too much "State Medicine" as there was danger that there might yet be some obnoxious bills in the way of Compulsory Health Insurance and similar matters enacted. The motion was thereupon withdrawn and the report referred to the Committee.

THE PRESIDENT: The next report for consideration is the report of the Committee on Medical Economics.

DR. SONDERN: I suggest that this report be allowed to take its natural course and go before the Reference Committee. Seconded and carried.

THE PRESIDENT: The next report is the report of the Committee on Public Health and Medical Education.

DR. KOSMAK: I move that the Committee be discharged from consideration of this report and that the report be accepted as printed. Seconded and carried.

THE PRESIDENT: The next is the report of the Special Committee on Public Health of the Greater City of New York.

DR. KOSMAK: I move that the Committee be discharged from consideration of this report and that the report be accepted by the House as printed. Seconded and carried.

Dr. Winter moved that a vote of thanks be extended to Dr. Harris for his faithful work as Chairman of this Committee. Seconded and carried.

THE PRESIDENT: The next is the report of the Special Committee on Drug Addiction.

DR. LYTLE: I move that the Committee be discharged from the consideration of this report and that it be adopted as printed. Seconded and carried.

THE PRESIDENT: The next report is that of the Special Committee to Consider the Economic Methods of Caring for Public Health.

Dr. Lewis stated that inasmuch as the subject of his Committee was also to be discussed in the report of the Committee on Legislation, they might very properly be considered together, and suggested that it be referred to the Special Committee and that both be discussed together. Motion seconded.

THE PRESIDENT: No action is necessary. I think that the report should be left to the Committee. The next report is that of the Counsel.

DR. KOPETZKY: I move that it be taken from the consideration of the Committee and be considered by the House of Delegates. Seconded and carried.

DR. KOPETZKY: I move that the report be adopted. Seconded and carried.

THE PRESIDENT: The next is the report of the Council of the First District Branch.

DR. STARK: I move that the reports of all the District Branches be adopted *en masse*. Seconded and carried.

THE PRESIDENT: The next is the report of the Committee on Prize Essays.

Dr. Edward D. Fisher read the report of this Committee as follows:

"The Committee on Prize Essays would state that three essays have been received. This is somewhat more encouraging than in previous years; but the Committee experiences a sense of disappointment and again offers its regrets that there is not a more earnest presentation of replies to the subjects it has indicated through the STATE JOURNAL and medical press, as well as by writers desiring to select their own subjects. Notwithstanding all this there is a lack of attentive consideration of the subjects on the part of members of the medical profession. It is possible that the amount offered, \$100, is too small, yet the money alone is not the real recompense. A writer who through this channel can command a prize is recognized by the profession as a man of ability. The Committee wish to acquaint the mem-

bers of the State Society with the efforts that are being made by the Committee on Prizes in the Medical Society of the State of New Jersey. They are offering a greater sum—as large as \$1,000—and we await with much interest the result. This latter sum is beyond our financial ability. The members of the Committee on Prize Essays would be pleased to receive any suggestions the profession may have to offer regarding the future management of the Merritt H. Cash and Lucien Howe prizes. After careful consideration of the three essays offered—two for the Merritt H. Cash and one for the Lucien Howe prize—the Committee is unanimous in recommending the one bearing the motto *Palmarum Qui Meruit Ferat* be awarded the Merritt H. Cash prize. Upon opening the envelope bearing this motto it was found the name of H. B. Sheffield, New York City."

DR. KOPETZKY: I move that the report be taken from the Committee. Seconded and carried.

DR. SONDERN: I move the adoption of the report. Seconded and carried.

THE PRESIDENT: Are there any other special committees to report?

DR. KOSMAK: There has been no action on the report of the Committee on Publication.

DR. HARRIS: I move that the Committee be discharged and the report be placed on file. Seconded and carried.

THE PRESIDENT: Report of the Committee on Arrangements is now up for consideration.

DR. KOPETZKY: I move that the report be accepted. Seconded and carried.

THE PRESIDENT: There is one more report—that of the Committee on Medical Research.

DR. KOSMAK: I move that the Committee be discharged from the consideration of this report and that the report be accepted as printed. Seconded and carried.

THE PRESIDENT: The next in order is unfinished business.

THE SECRETARY: There is none.

THE PRESIDENT: The next in order is new business.

Dr. Kopetzky stated that he wished to draw the attention of the House of Delegates to a newspaper clipping relating to the arrest of a certain physician for violating the Harrison Drug Act, and to present the following resolution:

WHEREAS, The Medical Society of the State of New York provides legal aid and defense to its members in lawsuits based on alleged malpractice; and

WHEREAS, The Counsel of the Society, either as such, or in his personal and private capacity, acts as legal adviser or trial lawyer in the defense of such suits; and

WHEREAS, In virtue of the position that this Society gives him, Mr. James Taylor Lewis brings to his client, not only his personal skill, but also the prestige which his office in this Society gives him, and thus in an appreciable way aids toward a better defense; and

WHEREAS, It was never contemplated by the Medical Society of the State of New York to defend either its members or any physician within the State who was accused of a breach of the criminal code or laws;

Therefore, Be It Resolved, That the House of Delegates of the Medical Society of the State of New York views with disfavor the action of its legal adviser and Counsel in attempting the defense of any member, either officially or in his private capacity, where such member is the defendant in a criminal action brought by the People of the State of New York, or by the United States Government; and

Be It Further Resolved, That no such defense hereafter shall be conducted by the Counsel of the Medical Society of the State of New York in his official capacity, nor shall he be attorney of record or the legal adviser in such a suit in his individual private capacity, without the consent of the Council of this Society.

DR. KOPETZKY: I move the adoption of the resolution. Motion seconded.

MR. JAMES TAYLOR LEWIS: As a matter of special privilege, I ask for the privilege of the floor for one minute.

DR. KOPETZKY: I move that it be extended. Seconded and carried.

MR. JAMES TAYLOR LEWIS: I am very much in favor of one part of this resolution, and that is that I or any other lawyer that you might have representing you should not appear in a criminal action in his personal practice of law without first presenting the facts to the Council and securing its approval.

The first part of this resolution I do not approve. It is not only unwise but dangerous. There have been a great many times in the last twenty years when, without charging a doctor (which I would have a perfect right to do under my contract or my arrangement with the Society), I have taken up large and small matters of a criminal nature for doctors. Now, I think that the Counsel of the State Society after twenty years has as keen a conception of the righteousness and rights of a defendant as the members of the Council, and I also think to a very large degree and in many instances it should be left to the Counsel himself to determine.

This question was recently raised about my appearance for one of your own members, a member of the State Society and the County Society of New York. I did what I thought was right. I have never spoken for publication to a reporter on the subject of this case in my life, so that I know nothing whatever about the source from whence this newspaper talk came. But I do believe that if a doctor is indicted as he may be, by the state or government officials for the commission of a crime, that if the doctor wishes to avail himself of it, he should be given the benefit of such experience as your counsel may have gained through twenty years of the study of medicine and surgery, and I think it is wrong to say offhand, that the state society's attorney, no matter what the rights, no matter what the charge, shall not appear for a member of this Society; shall not appear for a member of your own organization without he first, in every instance, consults a body of ten or twelve men who although eminent in their profession might have to delay days before taking action.

THE PRESIDENT: You heard the motion. The motion is the adoption of the resolution that was offered by Dr. Kopetzky. Are you ready for the question? All those in favor of the adoption of this resolution say aye; contrary, no. Lost.

Dr. Arthur J. Bedell offered the following resolution:

WHEREAS, There is an urgent need for some uniform authoritative system or method of determining percentage loss of vision in workmen who have suffered partial loss of sight; and

WHEREAS, The Committee appointed by the Section on Eye, Ear, Nose and Throat of this Society, which has given this matter considerable study for two years, presented a report at the last meeting which was unanimously accepted, and has prepared a working method for the computation of partial loss of vision based on the consideration of the three essential factors of vision: central vision, field vision and thereoscopic vision; be it

Resolved, That the House of Delegates of the Medical Society of the State of New York approve of the method therein set forth.

Dr. Bedell moved that the resolution be adopted. Seconded and carried.

Dr. Phillips offered the following resolution:

"WHEREAS, The Medical Society of the State of New York has continuously endeavored to carry on its work

through its various administrative and executive officers within the income derived from the regular \$3 annual per capita tax against each member; and

WHEREAS, The surplus of money in the treasury has dwindled to small proportions by reason of the advancing expense of maintaining the regular departments of the Society, by reason of the furnishing of extraordinary funds under resolutions passed from time to time by the House of Delegates, and by reason of the increased cost in every line of endeavor; now, therefore, be it

Resolved, That an Emergency Fund be created by levying a per capita charge of \$1 on each member, and that each constituent County Society shall pay to the treasurer the amount of the charge for this fund on or before December 31, 1920. The treasurer of each constituent County Society shall immediately proceed to collect from each member the charge of \$1 for the State Emergency Fund.

It was moved and seconded that the resolution be amended by increasing the emergency fund to \$2 per capita instead of \$1.

DR. PHILLIPS: I accept the amendment.

THE PRESIDENT: All those in favor of this signify by saying aye; contrary, no. Carried.

The Secretary offered the following amendment to Article 7, Section 2, of the Constitution:

"The State annual per capita assessment shall be \$5, and shall be collected by the County treasurers at the same time and as part of the County dues, and shall be remitted to the State Treasurer by the treasurer of each County Society on or before the first day of June of each year." (To lie over until next year.)

Dr. Elias H. Bartley offered the following resolution:

Resolved, That a Special Committee on Public Health and Legislation of the Greater City of New York be appointed, to consist of a chairman and three members from each of the Committees on Public Health and Legislation in the counties of New York and Kings, two members from Bronx and Queens, one member from Richmond. This Committee shall confer with and advise the public officials of the greater city of New York on matters of hygiene, public health and medical legislation, and make report on all matters relative thereto. It shall be subject to any order of the Council and shall report through its chairman directly to that body and to the House of Delegates. The chairmen of the Committees on Public Health and Legislation shall be members ex-officio of this Special Committee. This resolution shall continue in force until rescinded. Seconded and carried.

Dr. Phillips moved that the House adjourn until 8 or 8:30 in the evening. Seconded and carried.

Evening Session.

The House of Delegates reconvened at 8 P. M. and was called to order by the President. The Secretary offered the following amendment to the By-Laws, Chapter 7, Section 2, by adding to the standing committees a Committee on Prize Essays (to lie over one year.)

Dr. Nathan B. Van Etten moved that Dr. Delphey be permitted to have printed at his own expense for the purpose of propaganda against Compulsory Health Insurance as many copies as he desires of the report of the Special Committee on Compulsory Health Insurance, which was adopted at the Special Meeting of the House of Delegates, held November 22, 1919. Seconded and carried.

Dr. Thomas C. Chalmers offered the following resolution:

WHEREAS, The sentiment of the Queens-Nassau Medical Society, owing to the increase in members from

these two counties is in favor of the separation of these two counties, and the formation of two separate County Societies to be known as the Medical Society of the County of Nassau and the Medical Society of the County of Queens; therefore,

Be It Resolved, That power be given the Council to act favorably upon the application of the Queens-Nassau Medical Society for separation into two Societies when the said Queens-Nassau Society shall have voted favorably upon the same. Seconded and carried.

Dr. Charles H. Peck offered the following resolution:

WHEREAS: A bill for universal training for national service is now pending before the Congress of the United States, known as Senate Bill No. 3792; and

WHEREAS: Said bill seems to embody in a reasonable form a plan for universal training of the youth of the country; and

WHEREAS, The medical provisions of said bill provide for careful and adequate protection of the health of all in training; and

WHEREAS, The benefit to the young men in training, as to physical and mental development, the detection and cure of remedial defects, training in self-reliance, general morale, loyalty and good citizenship is incalculable; and

WHEREAS, The influence of the medical profession in supporting the principle of universal service, and in demanding proper medical supervision, and protection of the health of all in training, should such a bill become a law, is of the first importance; therefore,

Be It Resolved, That the House of Delegates of the Medical Society of the State of New York approve the principle of military service and approve the plan proposed in Senate Bill No. 3792 as reasonable and practical. Seconded and carried.

Dr. Dwight H. Murray offered the following resolution: To amend Article 3, Section 1, of the Constitution by adding the following: "The House of Delegates shall annually elect a speaker and a vice-speaker; these officers to serve for one year, or until their successors are elected and have qualified. They may or may not be members of the House of Delegates. All sections of the Constitution and By-Laws inconsistent with the amendment shall be modified to conform to this section immediately after its adoption." Seconded and carried.

DR. MURRAY: I have here a list of changes that must be made in the Constitution and By-Laws which I will read section by section, if that meets with the approval of the President. The sections were read as amended and Dr. Eden V. Delphey moved that the matter be referred to a committee. Seconded and carried.

THE PRESIDENT: I will appoint this committee: Drs. Dwight H. Murray, E. Eliot Harris and Edward Livingston Hunt.

Dr. Phillips moved that the proposed amendment to the Constitution, amending Article 4, by striking out the words: "Each County Society shall be entitled to elect to the House of Delegates as many delegates as there shall be State or Assembly districts in that county at the time of the election, except that each County Society shall be entitled to elect at least one delegate, and except that whenever at the time of election the membership of a County Society shall include members from an adjoining county or counties in which there shall be no County Society in affiliation with this Society, such County Society shall be entitled to elect, from among such members, as many additional delegates as there are Assembly districts in the county or counties so represented in its membership," and inserting the words: "The delegates shall be apportioned among the constituent societies in proportion to their actual active membership, except that each constituent society shall be entitled to elect at least one delegate. The House of Delegates may from time to time fix the ratio of ap-

pointments," be postponed for one year, that a committee of ten be appointed by the President to consider the matter.

Dr. Joseph L. Bendell moved an amendment, after a general discussion, to provide for the appointment of one member of the committee from one of the smaller counties.

Dr. Phillips stated that he was only too happy to accept that amendment, and suggested that the committee consist of seven instead of ten members, without any question of the part of the State from which they be appointed.

THE PRESIDENT: The motion is that action on this amendment be postponed for one year, and that the whole question be referred to a committee of seven appointed by the President. Seconded and carried.

Dr. Kosmak read the report of the Reference Committee, to which was referred the report of the Committee on Legislation. Moved and seconded that the report be adopted.

Dr. Delphey moved as an amendment that the report be adopted *seriatim*. Seconded and carried. Dr. Kosmak thereupon read from the report as follows:

"1. Owing to the stupendous expenditure involved, to the revolutionary changes it would cause in the present system of medical practice, and to the fact that, whether wise or illy advised, the plan has as yet received insufficient study, your Committee advises against the program of the State Department of Health and in favor of endorsing the proposition of the National Civic Federation for the appointment by the Legislature of a special commission 'to make a careful and exhaustive investigation and study of the extent, prevention and treatment of sickness,' as this is substantially in accord with the fifth finding of the majority report of the Special Committee adopted at the special meeting of the House of Delegates on November 22, 1919."

It was moved and seconded that the foregoing portion of the report be adopted. Carried.

"2. Your Committee endorsed the suggestion that the Cotillo Narcotic Bill be supported by the House of Delegates." Seconded and carried.

"3. Your Committee also favors endorsement of the Annual Registration Bill now before the Assembly." Seconded and carried.

"4. Your Committee favors endorsement of the amendment to the Workmen's Compensation Bill as presented by Dr. Delphey." Seconded and carried.

Dr. Kosmak read the report of the Committee to Consider Economic Methods of Caring for the Public Health, and on behalf of the Reference Committee recommended the adoption of the report subject to the following specifications, which were read *seriatim*:

"1. Your Committee favors the endorsement of legislation for the conservation of public health."

Dr. Stark moved that the recommendation be laid on the table. Seconded and carried.

"2. Your Committee approves the recommendation objecting to the certification of physicians as industrial examiners under Workmen's Compensation." Seconded and carried.

"3. Your Committee supports the objections to 'further increase in educational requirements' for entrance on the study of medicine." Seconded and carried.

"4. Your Committee endorses the recommendation for the appointment by the court of experts when mental conditions are involved." Seconded and carried.

"5. While favoring the principle involved in the recommendation for the extension of post-graduate work, your Committee feels that for the present this matter should be left to the individual initiative of the County Societies." Seconded and carried.

"6. Your Committee concurs in the objections to voluntary group insurance." Seconded and carried.

"7. Your Committee favors the recommendation for co-operation in the movements for national health conservation." Seconded and carried.

It was moved and seconded that the recommendation be placed on the table. Motion lost.

"8. Regarding questions concerning National Prohibition your Committee feels that the problems are as yet too new and their solutions too doubtful to make it wise for the House of Delegates to commit itself to any definite action." Seconded and carried.

"9. Your Committee favors the recommendation to simplify the present confusing multiple registrations. Seconded and carried.

"10. Your Committee recommends that the entire question of legal defense be referred to the Council, with instructions to report at the next meeting of the House of Delegates." Seconded and carried.

Dr. Kosmak then read from the report of the Special Committee to consider Economic Methods Relating to Diagnostic Clinics. It was moved and seconded that this matter be held for further consideration. Carried.

THE PRESIDENT: Before going further, we have lost during the past year two distinguished men who served as officers in this society—Dr. Jacobi and Dr. Crandall—and I will request Dr. Sondern to present the memorial to Dr. Jacobi.

Dr. Sondern presented the following:

In Memoriam

ABRAHAM JACOBI.

Born at Minden, Germany, May 6, 1830.
Died at Bolton Landing, Lake George, New York, July 10, 1919.

It is an honor and a great privilege to respond to the request to present a memorial to my late teacher and friend, ABRAHAM JACOBI, M.D., LL.D., who was born in Minden, Germany, on May 6, 1830, and died at Bolton Landing, Lake George, New York, on July 10, 1919, in his 90th year.

His was a long and eminently successful career, characterized by a strong personality and unusually brilliant professional attainment. The scope of his professional, civic and political labors was as wide as human activity, and the homage of the world was his in unusual measure.

A graduate of the Bonn University in 1851, he came to New York two years later. In 1857 he was appointed Lecturer on Infantile Pathology and in 1860 he became the first Professor of Pediatrics in America, of which subject he was one of the foremost teachers during the greater part of his long life. He was the first president of the American Pediatric Society, and did as much as any man in his day in the development of the more intimate knowledge of the diseases of infancy and childhood.

His hospital activities were numerous and constructive in character; in 1857 and 1858 he was one of the founders of the Lenox Hill Dispensary and Hospital, and he was connected in one or other capacity with the J. Hood Wright, Nursery and Childs, Mount Sinai, Bellevue, Roosevelt, Babies', Skin and Cancer, Orthopedic and Hackensack Hospitals, and with the New York Board of Health. His membership in societies was also extensive and characterized by faithful attendance and diligent participation in their activities. He was president of the New York Obstetrical Society, the Pathological Society, the New York Academy of Medicine, the New York County Society, the Medical Society of the State of New York, the Association of American Physicians, The American Climatological Association, and the American Medical Association, and

honorary member of medical societies in Berlin, Paris, Budapest, Boston and Philadelphia. Years ago our Dr. Vander Veer said, "When we look closely into the beneficent work done by our national association, special societies and medical congresses, we see Dr. Jacobi's influence, and we have a striking illustration of the national esteem in which he is held."

His many publications reflect his modesty and are noted for their brevity and practical worth—the constant desire to instruct on the broad basis of accurate observation and logical deduction.

Improvement in the ethical status and in the social and civic position of the members of the medical profession were his constant endeavor, and while a specialist of high order he stoutly maintained the need of constant contact with general medicine for all men in special practice. He also did much to promote the welfare of the community and of the nation by his activity in civic and political affairs. He was constant in his service on public committees, in public policy and in constructive argument before legislative bodies. Though advanced in years, his interest and activity continued to the end.

To commemorate his 70th birthday, prominent members of the profession in all parts of the world, combined in presenting him with a Memorial Volume, this being but one of the many evidences of international and local esteem he received during life. On one of these occasions Clifford Albott wrote: "Dr. Jacobi is an old and dear friend of mine, so that I the more rejoice in the distinction which his personal and scientific qualities have won for him among all English speaking people."

The simple and impressive funeral services were held at the New York Academy of Medicine on July 14, 1919, and a memorial meeting is planned for May 6, 1920, the 90th anniversary of his birth.

A patriot in his youth, a modest kindly man of strong personality and eminent professional skill, a foremost teacher and a pre-eminent public-spirited citizen; a man of men, who has rendered constructive service to his fellow men—is dead, after an arduous and well-spent life. May he rest in peace, and may his example be an inspiration to us all.

THE PRESIDENT: I will now call upon Dr. Dougherty to present the memorial to Dr. Crandall.

Dr. Dougherty presented the following:

In Memoriam

FLOYD MILFORD CRANDALL

Born at Belfast, N. Y., May 2d, 1858.
Died at New York City, November 19, 1919.

On November 19, 1919, on the official world of the Medical Society of the State of New York, a light went out, the gentle soul of our Secretary silently winged its way to the realm of eternal light, there to receive, if his earthly life be taken as a criterion, the welcoming commendation, "Well done good and faithful servant, enter thou into the joy of thy Lord."

Wherever men may be associated, grouped together for whatsoever purpose, there is, at all times, some particular one to whom has been granted the peculiar gift of having his light so shine before men that it becomes a guiding ray; a lamp burning on an altar of friendship where he offers himself in living self-sacrifice to duty and service and from whence emanates enlightenment, assistance and advice.

Such a one was Floyd Milford Crandall, sincere and upright in character, refined, dignified and courteous by nature and by education, essentially a gentleman. His early personal preference was for retirement rather than publicity and his inclinations rather toward literary pursuits than active work. His fate, however, lay not in his own hands, and even while still a student his qualification for office and

capacity for service were recognized by his classmates and he became and remained secretary of the class, with which he graduated with honors.

To him duty was paramount and self entirely subordinate, and when his tact, his optimism, his courage were needed by his county society he answered the call with earnest enthusiasm. Assuming office at a time of approaching crisis he threw himself heartily into the work and endured and persisted; no task too arduous, no problem too difficult, if for the welfare of his beloved profession. Each project and proposition was given a careful analysis as to motive and scrutinized with cool, calm judgment, and, if found worthy, his hand never left the plow until the furrow was completed. He counted that day lost in which something had not been attempted for the welfare of his brother practitioner and the elevation of the profession. No personal ambition led him on, he was not a politician. The applause and the approbation of the multitude counted nothing; success, and success only, counted and stimulated to further effort. His facile pen, his ready tongue, and his logical mind belonged not to himself but to those who needed them. A true friend and a genial companion he never aspired to the title of a good fellow. Work was his happiness, altruistic work his joy.

As Crandall the man stood out from his fellows, so also stood Crandall the Secretary; as such he has written his own eulogy, his work speaks and will continue to speak for him.

His lamp of life has gone out but he will never be shrouded in the gloom of oblivion; fond memory will ever cast its light around him, and he and his work ever live in the annals of our Society.

If allowed to paraphrase, we might sum up his character as a man by saying,

"He did not sit in the scorner's seat
Nor hurl the cynic's ban;
He lived in a house by the side of the road
And was the friend of man."

It was moved that the House of Delegates stand for thirty seconds in silent reverence of the memory of Dr. Jacobi and Dr. Crandall. Seconded and carried.

The House of Delegates thereupon arose and remained standing for thirty seconds.

The Secretary moved that the memorials be accepted and spread upon the minutes. Seconded and carried.

It was moved that the Secretary be instructed to send copies of the resolution relating to military service to the chairman of the committee of the House of Representatives and of the Senate having to do therewith. Seconded and carried.

On motion of Dr. Harris the House of Delegates adjourned to meet at 10 A. M. on Tuesday.

ADJOURNED MEETING OF THE HOUSE OF DELEGATES.

The House of Delegates met at 10 o'clock A. M., March 23, 1920, and was called to order by the President.

THE PRESIDENT: The first order of business is the roll call.

The Secretary called the roll and the following delegates responded:

Arthur J. Bedell, Joseph L. Bendell, H. Judson Lipes, Chauncey R. Bowen, Cornelius J. Egan, Joseph H. Gettinger, Robert Goldberg, Jacob A. Keller, Samuel Rosenzweig, Norman Roth, Nathan B. Van Eiten, John E. Virden, Charles S. Wilson, Edward Torrey, M. P. Conway, Vernon M. Griswold, J. William Morris, George D. Johnson, William D. Collins, Charles J. Kelley, Robert W. Andrews, John A. Card, Robert H. Breed, Arthur G. Bennett, George F. Cott, F. Park Lewis, Julius Richter, Charles G. Stockton, Harry R.

Trick, Grover W. Wende, Frank G. Calder, W. D. Johnson, Robert Selden, Harry H. Halliwell, James F. McCaw, Robert F. Barber, Elias H. Bartley, Alfred Bell, J. Bion Bogart, William F. Campbell, Roger Durham, Edwin H. Fiske, James W. Fleming, Russell S. Fowler, James C. Hancock, O. Paul Humpstone, Frank D. Jennings, William A. Jewett, H. B. Matthews, William Linder, Walter D. Ludlum, Sylvester J. McNamara, William Pfeiffer, Ralph H. Pomeroy, Charles E. Scofield, John J. Sheehy, Walter A. Sherwood, James McF. Winfield, F. Edward Jones, Arthur L. Shaw, Nelson O. Brooks, Clarence V. Costello, B. J. Duffy, Owen E. Jones, Howard L. Prince, Charles Stover, S. Dana Hubbard, C. H. Chetwood, Theodore H. Allen, George Barrie, Ten Eyck Elmendorf, E. Eliot Harris, Ward B. Hoag, George W. Kosmak, J. Milton Mabbott, Eden V. Delphay, Daniel S. Dougherty, Wendell C. Phillips, Alfred C. Prentice, Henry S. Stark, Howard C. Taylor, Gustav G. Fisch, Samuel J. Kopetzky, James Pedersen, Eugene H. Pool, Abraham J. Rongy, Frederick T. van Beuren, Orrin S. Wightman, Walter A. Scott, Lyman H. Wheeler, Arthur P. Clark, Thomas H. Farrell, George M. Fisher, Henry B. Doust, William W. Skinner, William H. Snyder, Ralph E. Brodie, Walter H. Kidder, Thomas C. Chalmers, Frank P. Hatfield, A. L. Higgins, Martin M. Kittell, L. Howard Moss, Howard W. Neail, George A. Newton, Louis A. Van Kleeck, Burton S. Booth, Thurman A. Hull, Arthur S. Driscoll, E. Warren Presley, George A. Leitner, W. Grant Cooper, William B. Hanbidge, Henry G. Hughes, Frederick C. Reed, Elliott I. Dorn, Bertis R. Wakeman, Frank Overton, William H. Ross, Luther C. Payne, Luzerne Coville, Frank L. Eastman, Charles H. Bennett, John F. Black, Edward F. Briggs, Arthur S. Corwin, Henry W. Titus, William J. Vogeler, E. Leslie Burwell, William R. Thomson, George E. Welker.

The following officers and chairmen of committees were present: Grant C. Madill, Dwight H. Murray, W. Meddaugh Dunning, George W. Cottis, Edward Livingston Hunt, Harlow Brooks, Joseph B. Hulett, Luther Emerick, T. Avery Rogers, John H. Pratt, Albert T. Lytle, Parker Syms, J. Richard Kevin, Henry Lyle Winter, Joshua M. Van Cott, Charles H. Peck, Fred-eric E. Sondern.

THE PRESIDENT: The next order of business is the election of officers, and the first is a President to succeed the present President, Dr. Madill. Dr. William F. Campbell nominated Dr. J. Richard Kevin. Brooklyn, for President.

Dr. Owen E. Jones nominated Dr. Ralph R. Fitch, Rochester, for President.

It was moved and seconded that the nominations be closed. Carried.

The President appointed as tellers Dr. Luzerne Coville, Dr. Walter H. Kidder, and Dr. Arthur J. Bedell.

The tellers reported that there were one hundred and eight votes cast, of which Dr. Kevin received sixty-seven and Dr. Fitch forty-one.

The President declared Dr. Kevin duly elected President of the Society.

Dr. Jones moved that the election of Dr. Kevin be made unanimous. Seconded and carried.

The following officers were nominated and declared duly elected:

First Vice-President W. Meddaugh Dunning, New York; Second Vice-President, Dr. Wesley T. Mulligan, Rochester; Third Vice-President, Dr. William H. Purdy, Mt. Vernon; Secretary, Dr. Edward Livingston Hunt, New York; Assistant Secretary, Dr. Charles Gordon Heyd, New York; Treasurer, Dr. Harlow Brooks, New York; Assistant Treasurer, Seth M. Milliken, New York.

Chairman Committee on Scientific Work, Dr. Samuel Lloyd, New York; Chairman Committee on Public

Health and Medical Education, Dr. Joshua M. Van Cott, Brooklyn; Chairman Committee on Legislation, Dr. James F. Rooney, Albany; Chairman Committee on Medical Economics, Dr. Henry Lyle Winter, Cornwall; Chairman Committee on Medical Research, Dr. Fred-eric E. Sondern, New York.

Dr. E. Eliot Harris moved that the election of Speaker and Vice-Speaker be postponed until after the report of the Committee on changes in the Constitution and By-laws. Seconded and carried.

Dr. Phillips moved that the designation of place of the next annual meeting and the appointment of the chairman of the Committee on Arrangements be delegated to the Council. Seconded and carried.

Preliminary to the next order of business Dr. Phillips moved that the seven men receiving the highest vote for delegates to the American Medical Association shall be declared the delegates, it being understood that the seventh one of the list is for one year to fill an unexpired term. Seconded and carried.

The following delegates to the American Medical Association were declared elected for two years: Dr. E. Eliot Harris, New York; Dr. Eden V. Delphey, New York; Dr. Edward Livingston Hunt, New York; Dr. Arthur J. Bedell, Albany; Dr. J. Richard Kevin, Brooklyn; Dr. Dwight H. Murray, Syracuse; for one year, Dr. Frederic E. Sondern, New York.

The following Alternate delegates were declared elected for two years: Dr. James W. Fleming, Brooklyn; Dr. Nathan B. Van Etten, New York; Dr. George W. Kosmak, New York; Dr. Alfred C. Prentice, New York; Dr. Nelson O. Brooks, Oneida; Dr. Albert T. Lytle, Buffalo. For one year, Dr. J. Lewis Amster, New York.

Dr. Winter asked the privilege of the floor be granted to Dr. Robert T. Morris. Motion seconded and granted.

Dr. Robert T. Morris addressed the House of Delegates with reference to the desirability and necessity of a Physicians' Home. He stated that there was great need for such a home; as the present agencies existing for the purpose of caring for aged and indigent physicians were inadequate. He outlined in general the plan for the care of such physicians, and stated that the plan for the home included having branches in the South and in the West. The home would be a national affair, and an enterprise deserving the help and interest of physicians throughout the country.

Dr. Morris stated that the response to the appeal had been generous; that checks were coming in every day; that a good many laymen had shown an interest in the project, and a number of them had made a bequest in their wills to the Physicians' Home, and others had said they would stand ready to back the enterprise immediately with an endowment as soon as they knew definitely just what the plans were and how well managed the funds were to be. Checks for ten dollars each for annual membership were coming in every day through the mail, and the plan was well under way.

Dr. Morris asked the endorsement of the House of Delegates for the plan.

Dr. Phillips moved that the House of Delegates endorse the plan as outlined by Dr. Morris. Seconded and carried.

THE PRESIDENT: Is the committee which was appointed to consider the amendments introduced by Dr. Murray ready to report?

DR. MURRAY: Your Committee made only such changes necessary to carry out the purpose of the original amendment. In Article 3, section 1, after the words, "Three Vice-Presidents," insert "A Speaker and a Vice-Speaker of the House of Delegates."

In the second clause of that section after the words Vice-President," insert "Speaker and Vice-Speaker." That is all for section one. It was moved and seconded that the changes as read by Dr. Murray be adopted. Seconded and carried.

DR. MURRAY: In section 3, article 3, after the word "Society", in the second line, insert the words, "Except the Speaker and Vice-Speaker." It was moved that the change be adopted. Seconded and carried.

DR. MURRAY: Under Chapter 3, Section 8. Insert after Section 4 a new Section 5, Report of Speaker, and renumber the following sections in order.

It was moved that the amendment be adopted. Motion seconded and carried.

DR. MURRAY: Chapter 6, section 1, after the word Society strike out "the House of Delegates."

It was moved and seconded that the amendment be adopted. Seconded and carried.

DR. MURRAY: Chapter 6. Insert new Sections 3 and 4 as follows:

Section 3. "The Speaker shall preside at all the meetings of the House of Delegates. He shall deliver an address at the annual meeting and shall perform such other duties as custom and parliamentary usage may require.

He shall appoint all special committees of the House of Delegates.

Section 4. "The Vice-Speaker shall perform the duties of the Speaker when requested by the Speaker to do so, or in case of the death, resignation, or inability of the Speaker to act in that capacity from any cause."

The other sections to be numbered accordingly. Moved that the amendment be adopted. Seconded and carried.

DR. MURRAY: Chapter 7, amending Section 9 line 2, by substituting the word "Speaker" for "President." Moved that the amendment be adopted. Seconded and carried.

DR. PHILLIPS: I now move that the House of Delegates approve the recommendations as a whole. Seconded and carried.

Dr. Delphey moved that the thanks of the House of Delegates and Society be extended to the Committee for their painstaking work in revising the Constitution and by-laws. Seconded and carried.

PRESIDENT: The next in order is the election of the Speaker and Vice-Speaker.

Moved, seconded and carried that Dr. E. Eliot Harris of New York, be elected Speaker, and Dr. Dwight H. Murray of Syracuse, Vice-Speaker.

The President appointed the following committee to consider the proposed amendments to the Constitution, article 4:

Drs. Grover W. Wende, Thomas H. Halsted, Owen E. Jones, James T. McCaw, Arthur J. Bedell, William F. Campbell, Daniel S. Dougherty.

The proposed amendment is as follows:

Amend the Constitution, Article IV, by striking out the words "each county society shall be entitled to elect to the House of Delegates as many delegates as there shall be State Assembly districts in that county at the time of the election, except that each county society shall be entitled to elect at least one delegate, and except that whenever at the time of election the membership of a county society shall include members from an adjoining county or counties in which there shall be no county society in affiliation with this Society, such county society shall be entitled to elect, from among such members, as many additional delegates as there are assembly districts in the county or counties so represented in its membership."

And inserting the words: "The delegates shall be apportioned among the constituent societies in proportion to their actual active membership, except that each constituent society shall be entitled to elect at least one delegate. The House of Delegates may from time to time fix the ratio of apportionment."

Dr. Harris moved that the action presented at the last meeting with reference to changing time and place of annual meeting, as referred to in the notice of meeting, be adopted by the House of Delegates. Seconded and carried.

Dr. Dougherty moved that the proposed amendment to the by-laws, Chapter 2, which is, "No person not a delegate shall be allowed the privileges of the floor in the House of Delegates save on an affirmative vote of the House," be not approved. Seconded and carried.

Dr. Dougherty offered the following resolution:

RESOLVED, That the circular "Questionnaire" issued by the National Republican Campaign Committee be referred to the Committee on Economics, and that it be directed to present to the National Republican Campaign Committee the position of the Medical Society of the State of New York on the subject of Compulsory Health Insurance and the reasons therefor. Seconded and carried.

Dr. Skinner called the attention of the House of Delegates to an article appearing in a New York newspaper under date of March 23, and offered the following resolution:

RESOLVED, That we protest against the insinuation contained in the report of the League of Women Voters, which implies that we in our opposition to Compulsory Health Insurance are acting at the instance of an up-State league or any other league of business men; that we are uncompromisingly opposed to Compulsory Health Insurance and base that opposition on the high ethical ground that Compulsory Health Insurance is destructive of the best interests of the practice of medicine and of the medical profession and the public at large. Seconded and carried.

Dr. Delphey offered the following resolution:

RESOLVED, That the delegates from this Society to the House of Delegates of the American Medical Association be and are hereby instructed to introduce a resolution in the House of Delegates of the American Medical Association, opposing any scheme for Compulsory Health Insurance, and to support the resolution in every way possible. Seconded and carried.

Dr. Alfred C. Prentice offered the following resolution:

RESOLVED, That the Council be authorized to publish the Constitution and By-laws as amended at this session of the House of Delegates, making such verbal alterations as seem necessary in their judgment without altering the sense. Seconded and carried.

Dr. Thomas C. Chalmers referred the House of Delegates to a report appearing in a morning newspaper of March 23d, and offered the following resolution:

RESOLVED, That the Medical Society of the State of New York views with disfavor the report as printed in a morning paper, recently, in regard to physicians, headed: "Physicians refuse to censure a member of the medical profession." Seconded and lost.

Dr. Eastman moved that a Publicity Committee be appointed to confer with the members of the Press so that the exact views of the Society would be given to the people on matters affecting them. The President stated that that was a matter which would come within the duties of the Executive Secretary.

The President announced that there would be a meeting of the Council on Thursday at 2:30 o'clock, in the rooms of the State Society.

Dr. Harris moved a vote of thanks to the President for having executed the duties of his office so satisfactorily to all. Seconded and carried.

Dr. Bedell moved a vote of thanks to the Arrangement Committee. Seconded and carried.

Upon motion of Dr. Harris, duly seconded and carried, the House of Delegates adjourned at 1:15 P. M.

EDWARD LIVINGSTON HUNT, *Secretary*.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

PRINCIPLES AND PRACTICE OF PHYSICAL DIAGNOSIS. By JOHN C. DA COSTA, JR., M.D., Ex-Assoc. Professor Medicine, Jefferson Medical College, Philadelphia. Fourth Edition. Thoroughly revised. Octavo of 602 pages with 225 original illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$4.75 net.

MODERN SURGERY, GENERAL AND OPERATIVE. By J. CHALMERS DA COSTA, M.D. Samuel D. Gross, Professor Surgery, Jefferson Medical College, Philadelphia. Eighth edition. Revised, Enlarged and Reset. Octavo of 1697 pages with 1177 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$8.00 net.

HENRY MILLS HURD. The First Superintendent of the Johns Hopkins Hospital. By THOMAS STEPHEN CULLEN. Published by the Johns Hopkins Press, Baltimore, Md. Price, \$1.50.

THE TREATMENT OF SYPHILIS. By H. SHERIDAN BAKETEL, A.M., M.D. Published by the MacMillan Company, New York City. Price, \$2.50.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number III. (The Mayo Clinic Number, November, 1919.) Octavo of 296 pages. 79 Illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly. Price per Clinic year: Paper, \$12.00. Cloth, \$16.00.

PRINCIPLES AND PRACTICES OF INFANT FEEDING. JULIUS H. HESS, M.D. Illustrated. Second Revised Edition. Published by F. A. Davis Company, Philadelphia. Price, \$2.50.

REGIONAL ANESTHESIA. (Victor Pauchet's Technique.) By B. SHERWOOD-DUNN, M. D. With 224 Figures in the text. Published by F. A. Davis Company, Philadelphia. Price, \$2.50.

ORTHOPEDIC AND RECONSTRUCTION SURGERY, INDUSTRIAL AND CIVILIAN. By FRED H. ALBEE, M.D., F.A.C.S., Prof. and Director Department of Orthopedic Surgery at the New York Post-Graduate Medical School. Octavo volume of 1138 pages; 804 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$11.00 net.

POPE'S MANUAL OF NURSING PROCEDURE. By AMY ELIZABETH POPE. Formerly Instructor in the School of Nursing, Presbyterian Hospital, N. Y. Published by G. P. Putnam's Sons, New York and London. Price, \$2.00 net.

THE TRANSMUTATION OF BACTERIA. By S. GURNEY-DIXON, M.A., M.D. Published by the Cambridge University Press. Price, \$3.25.

THE SURGICAL CLINICS OF CHICAGO. Volume IV, Number I, (February, 1920). Octavo of 231 pages, 83 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly: Price, per year: Paper, \$12.00. Cloth, \$16.00.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number IV. (The Boston Number, January, 1920.) Octavo of 316 pages, 43 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly. Price per Clinic year: Paper, \$12.00. Cloth, \$16.00.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By E. W. ROCKWOOD, M.D., Ph.D. F. A. Davis Company, Philadelphia, Publishers. Price, \$2.00 net.

LABORATORY MANUAL OF PHARMACOLOGY. Including Materia Medica, Pharmacopaedics and Pharmacodynamics. By A. D. BUSH, B.Sc., M.D. F. A. Davis Company, Philadelphia, Publishers. Price, \$3.50 net.

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ORIGINAL ARTICLES

ENCEPHALITIS LETHARGICA.*

By EDWARD LIVINGSTON HUNT, M.D.,

NEW YORK CITY.

THE present epidemic of encephalitis lethargica has acquired prominence from its virulence, its widespread distribution, and the many forms in which it has appeared. The disease is not new. Conditions similar to it existed in Germany as far back as the seventeenth century, and in Italy and Hungary in 1890. The epidemics which were recognized and fully described occurred in Vienna in 1916-1917, in England in 1918, and in the United States in 1919. Outbreaks of the disease have at one time followed epidemics of influenza, at others epidemics of poliomyelitis. It is, therefore, not out of place to suggest that some connection may exist among the three diseases. There is a feeling held by many that influenza is a precursor of encephalitis, and by others that poliomyelitis and encephalitis are closely related, if not identical processes. It is not as yet possible to say just what connection, if any, exists between influenza and encephalitis, nor whether poliomyelitis and encephalitis are one and the same.

The disease is an acute infection and, like most acute infections, is due to a specific virus. Strauss, a year ago, proved that an inoculation of emulsion of human brain produced lesions in

the monkey characteristic of the lesions found in encephalitis and that washings from the nasopharynx in a case of encephalitis produced paralysis in the monkey. More recently he has obtained a filtrable virus from nasal washings which in 85 per cent of the cases has given positive results in animals, and in the case of the spinal fluid 80 per cent. He feels justified in concluding from this that the virus enters the system through the nose, which fact he corroborates by calling attention to the frequency with which coryza ushers in encephalitis. The disease is, therefore, infectious and probably mildly contagious. Two observers have reported more than one case occurring in a single family. Here in New York we have had two members of the house staff affected with it, one at Mt. Sinai and one at Lincoln Hospital.

The pathological changes which encephalitis produces are inflammatory in character. Macroscopically the brain shows a considerable degree of edema and a marked venous congestion. Microscopically there appears an infiltration of small round cells in the lymph spaces, and especially around the smaller blood vessels and nerve cells. In addition to this are numerous small hemorrhages, areas of necroses and a chromatolysis of the nerve cells. These changes are most evident in the basal ganglia and mid-brain, where the resultant congestion is greatest. However, from the reports of many observers these changes are not limited to the basal ganglia but may occur anywhere in the nervous system.

The type of symptoms which occur in any particular case are dependent upon the particular part of the nervous system affected. Thus, if the

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

disease attacks the globus pallida, tremor and rigidity will result; if it attacks the thalamus, choreiform movements will result; if the meninges, rigidity occurs; if the spinal nerve roots, pain will result; if it attacks the cranial nerve nuclei, ophthalmoplegia, facial paralysis, and so on.

There are four cardinal symptoms. I do not mean that these four necessarily always occur, but that they are usual, frequent and typical. These are: (1) Ocular paralyses. (2) Hypersomnia. (3) Elevated temperature. (4) A change in the general state.

Of these, ophthalmoplegia and hypersomnia usually attract attention first.

In addition to these there are several other important symptoms which I shall briefly discuss.

The Cranial Nerve Palsies.—The most frequent group of symptoms which occurs in encephalitis lethargica is an affection of one or more of the cranial nerves. Reports have been made of an involvement of all but the first. The third nerve is the one most commonly affected, giving rise to ptosis. This may be single or double, complete or incomplete, constant or transient. Next in frequency may occur paralyses of either the fourth, sixth or seventh. These ocular paralyses often inaugurate the disease, so that ptosis, double vision or strabismus may present themselves even before fever or apathy. It is not at all unusual for paralyses of two or more cranial nerves to occur simultaneously; thus, I have seen patients with ptosis and a facial paralysis, with ptosis and an internal strabismus. Many patients complain of a slight dizziness, which may indicate an involvement of the eighth nerve. The ophthalmoscope does not reveal much; usually a congestion of the fundus and in two instances an optic neuritis. It has been suggested that the pain in the ear or on the side of the face, a symptom which some cases present, is indicative of an involvement of the fifth nerve. One can, of course, deduce a conclusion that the greater the number of cranial nerves involved, the more unfavorable the prognosis.

Euphoria.—Euphoria is a very frequent symptom; in constancy it should rank next to the cranial nerve palsies. The large majority of these patients are without complaint; they say they feel well and, if not delirious, maintain that they are well. A few suffer from mental depression, but a great many are neither unhappy nor in pain, except those afflicted with radiculitis. It is unusual to see a severe illness in which the patient is so little cognizant of his true condition; it is also unusual to find a disease in which the feeling of well-being and the absence of any distress is so marked and so constant. For these reasons it is fair to place euphoria among the leading symptoms.

Rigidity.—There is often some rigidity. It is variable, inconstant and irregular in distribution, and is of course dependent upon the meningitic involvement. The rigidity of the neck is rare and when present never as marked as that in tuberculous meningitis.

Slight or marked rigidity may affect the arms or legs. It often varies from day to day, and is a symptom of the second or third week of the disease.

Tremors, Spasms and Choreiform Movements.—I have placed these physical signs under one heading, as they are somewhat similar. The tremor which occurs in encephalitis is coarse and in many respects similar to that seen in paralysis agitans. In distribution, however, it differs from the Parkinson tremor. In the latter disease the onset is apt to be hemiplegic and the termination general, whereas in encephalitis the distribution is most frequently in the face and hands. In some cases the tremor appears at the very beginning, in some towards the end of the first week, while in others it is wholly absent.

The choreiform movements are irregular, jerky, and resemble those seen in Sydenham's chorea. They occur with great frequency and may be general or localized. Most commonly they are general. In those cases in which they are localized the distribution is variable. I have seen cases in which the choreiform movements were entirely restricted to the abdominal muscles, and others in which they were restricted to the hands. In one instance I saw a patient with choreiform movements which involved only the muscles of the lips and the lower face so that the patient was constantly making grimaces very similar to the muscular movements made by a rabbit when eating. In another instance the movement was limited to one-half the body.

Temperature Changes.—Elevated temperature has been present in all of the cases which I have seen. Observers, however, have reported cases without temperature, so that fever should not be considered an essential of the disease. In those cases in which no temperature has been reported, it should always be borne in mind that the temperature may have existed before the patient came under observation, or at some hour between the readings. While temperature may not be considered as an essential, it probably does occur in more than five-sixths of the cases. The usual rise is to 101° or 102°, but it may be less or more. It is a characteristic of the disease that the temperature may at any time suddenly rise to 103° or 104°.

The facies of encephalitis lethargica is sufficiently characteristic to warrant a separate description. It varies with the different types. In the mild form, or at the beginning of the disease, the skin may be natural in color or slightly flushed, and the ophthalmoplegia or facial paral-

ysis alone stamp the disease. Gradually, as the condition advances, a lack of expression develops and finally the characteristic appearance. The classic facies of encephalitis is rigid, mask-like and devoid of expression. The facial muscles are drawn downward, the skin is pasty and wax-like, and one or more cranial nerve paralyses distort the features. It closely resembles the facies of Parkinson's disease, with the addition of ptosis or facial palsy, and a skin gray and pasty. There is something very unmistakable about the immobility, the paralysis and the grayness. As ptosis is the most common of the paralysis, it is usual to see these patients lying in bed with partly closed lids.

Apathy.—The apathy appears about the second week of the disease. It may be slight or intense, or it may be interrupted by an active and busy delirium. The most characteristic attributes of this lethargy are the lack of proportion between the real and apparent, and the ease with which the patient can shift from stupor to consciousness and vice versa. It is usual to see these patients roused and then relapse back into coma. They will wake, say that they are feeling quite well, take some nourishment, and immediately go back to sleep.

Eye Symptoms.—Among the eye symptoms are diplopia, nystagmus, fixed and unequal pupils. All of these have been observed. Diplopia is the most common; in fact, few cases occur without it, and it is frequent in about 60 per cent of the cases. Nystagmus is most apt to be present in the Parkinson type.

Mental symptoms occur with great frequency. They may vary from a mild delirium to a condition of mania. The delirium is of the muttering, busy type; it is usually inconstant and may subside during the day. The patient chatters and mutters about his work and picks at the bed-clothes. As the disease advances, the mental symptoms change. In the ordinary cases, apathy at first alternates and then wholly supervenes. I have noticed that a very active delirium, if prolonged, constitutes a prognostic sign of grave import. The mental disturbances most frequently appear in the first week of the disease.

Sphincter involvement occurs as a late, rather than an early symptom, and very rarely ushers in the disease. I did, however, see one case which entered the hospital for retention of urine. I have seen three encephalitis patients in adjoining beds, each requiring catheterization. Involvement of the sphincters is serious from a prognostic point of view, and when accompanied by excessive temperature and increasing apathy, is apt to terminate fatally. Both sphincters become involved at about the same time.

Speech disturbances should be placed among the list of frequent symptoms. The type of disturbance is difficult to describe, as there is nothing

quite like it. The speech is thick, difficult to understand, hesitating and chopped off.

Laboratory Symptoms.—The laboratory does not help much in the diagnosis. The blood may show a slight leucocytosis, but is otherwise negative. The spinal fluid shows a more or less marked pleocytosis, which is dependent upon the meningeal involvement. In the cases which I have seen, the cell numbers varied from fifteen to fifty and occasionally higher.

The pulse is rapid and hurries as the disease advances. It is usually considerably above 100 and may rise to 140 or 150.

There are other less common symptoms, among which I might mention as the most frequent, pain, pupillary inequality, hiccoughing, exaggerated knee jerks, slight rashes, Kernig's sign.

The pain may be an initial symptom and may occur in the face, arms, or legs. It appears to be due to the radiculitis. It is sharp, very intense, and difficult to relieve. It is, fortunately, not of very long duration.

The occurrence of severe pains in the arms, legs, or about the face of the patient suffering from an acute infection, ought to suggest the condition of encephalitis lethargica. One might mistake neuralgia, sciatica, or even the pains of tabes for the radicular pain of encephalitis.

Inequality of the pupils, together with fixity of the pupils, is not uncommon. The inequality is of longer duration than many other symptoms. I have known of one boy who, having been up and about for some weeks, still retained a marked degree of inequality of the pupils.

The knee jerks, in the majority of the cases, are apt to be unequal and vary during the course of the disease. This physical sign is not, however, of very long duration.

Kernig's sign and slight rashes appear but are infrequent. Herpes and a tache cerebrale have been reported.

There are several types of the disease. So far we have been able to recognize two which are very distinct, the slow and the rapid. The slow are gradual, and preceded by a period of malaise, coryza and slight temperature. The slow type is difficult to recognize, as it is insidious and at first suggests something akin to a mild influenza. It is as insidious and suggestive as is typhoid fever. The rapid cases are violent, fulminating and self-evident. They are frank and open declarations of a severe infection. It is in these that the mental symptoms are apt to be most pronounced and most extreme.

I feel that in addition to these two types there should be recognized a third which one might denominate "the mild." I have seen cases in which there was a little temperature, a slight involvement of one cranial nerve, and a pleocytosis preceded by a mild and short-lived delirium and followed by slight apathy. The entire pic-

ture might be described as a miniature of the disease. These cases run a much shorter course and end in an uninterrupted recovery.

It is characteristic of both the slow and rapid types to have a prolonged convalescence accompanied by a recurrence or relapse of some of the physical signs. It is, I believe, a characteristic of the mild type to have a short and uninterrupted convalescence. In some of these mild cases I have seen the patient improve decidedly in forty-eight hours.

The course of the disease in the pronounced cases is measured by weeks. So far as sex is concerned, in the cases which I have seen, the preponderance has been among males. Whether this is a coincidence or not, I cannot say. So far as age is concerned, my experience has been that the disease has been most apt to attack the young and the sturdy.

The prognosis is fair, 65 per cent of the cases recover. There are one or two points which I might mention in this regard. The slow cases run a less severe course than the rapid, and in children the outlook is far better than in adults. A very low, as well as a very high, cell count is not favorable. Those cases in which the count is intermediate, that is, ranging from 40 to 60, afford a much better prognosis.

A CONTRIBUTION TO THE SYMPTOMATOLOGY OF EPIDEMIC ENCEPHALITIS.*

By MICHAEL OSNATO, M.D.,
NEW YORK CITY.

THIS note does not aim to be a summary of the literature on the subject which is under discussion. It is the object of the writer to give his personal observations in fifteen cases of epidemic encephalitis, pointing out if possible the findings which are the most important elements in the synthesis of the symptoms which lead to the diagnosis. At the same time we wish to point out the various pictures which one encounters in this disease which may resemble other clinical entities, resulting sometimes in confusion. The diagnosis of epidemic encephalitis is all-important because other things which may resemble it may have a therapy which is more or less specific and a prognosis which may be less serious.

The study is based on fourteen undoubted cases and one case which had cranial nerve signs which were fleeting, the mental picture later dominating the condition and finally leading to commitment of the patient to a private institution as a case of toxi-infectious psychosis rather than epidemic encephalitis. The cases which I have observed lend themselves to classification

within four groups: The lethargic, the delirious, the comatose types with Katatonic symptoms and the choreic types. The Parkinsonian type described by other observers has been in my experience characterized mentally almost entirely by lethargy or somnolence and will be described in the first group. The characteristics of the various groups will be pointed out with certain apparently distinctive features emphasized. The general considerations, such as etiology, onset, course and prognosis, will be treated in a general discussion without too much specific reference to types, because it must be immediately stated that a too strict restriction of the average case of epidemic encephalitis to a particular type is not possible, as several features of each of the groups mentioned may also occur in the others. Nevertheless, for the purposes of study, classifications like the groupings advanced here are permissible and perhaps desirable.

Etiology.—Influenza, or, to be more exact, infections of the respiratory passages, whether they involve the nose and throat or the lungs, apparently play a very important part either as a direct causative factor or in preparing the ground for the organism which may be the actual cause of the condition. In nine of the fifteen cases a very definite history was obtained of an acute illness anteceding the encephalitis characterized by chills and fever, cough, sneezing, sore throat and pains in the chest. In nearly all of these cases following the acute infection which we may call influenza, there was a period of well-being which in some lasted only a few days and in others several weeks. One patient had an acute conjunctivitis with considerable edema of the lids for four or five days previous to the onset of her encephalitis. There were no respiratory or nasal symptoms in this case, and it seems permissible to suspect that the mucous membranes of the lids infected the nasal passages by way of the lachrymal ducts, and this avenue of infection to the brain was then followed. In five cases careful questioning failed to bring out any history of reasonably recent respiratory or influenzal infections. In four of the cases with the most pronounced delirial reaction, some emotional upset immediately preceded the onset of the symptoms.

One little girl of 14 had acted as a monitor in her school, which was in an East Side Italian quarter. She had occasion to report several girl pupils for misconduct. The children were punished. After school they waited for the little monitor, beat her up and threatened to kill her. She was persecuted in various ways for several days until the child was in the throes of an intense fear neurosis. She was chased home from school on the day of the onset of her encephalitis by her tormentors, who threatened to kill her, and she ran into her home trembling and out of breath. Her mother put her to bed,

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 25, 1920.

and in a few hours the patient became delirious, with a high temperature and great choreic motor excitement. This patient was at first considered by her attending physician to be an acute febrile chorea.

Another patient, a man of 36, developed his delirial febrile state the day following an altercation with a fellow workman which ended in a fist fight.

A patient whose case ended fatally was pregnant about four months. She was a primipara. Her husband quarreled with her, she became intensely emotional and the following day developed a delirium.

A patient, a girl of 17, had nursed her mother through an attack of influenzal pneumonia during which she had very little sleep and a great deal of anxious excitement. After the mother recovered the patient went to pieces, became greatly excited, febrile and delirious.

The next case was a man who had had a death in the family following which he was anxious and depressed and had what was said to be a "cold" for a few days and then had his delirium.

These cases were the only ones in which the emotional factor preceding the infection was elicited, and it is interesting to note that each of them showed very active delirium. It seems permissible to ascribe to this emotional factor some of the responsibility for the delirial reaction.

Two of the patients were pregnant, one for four months and the other five and a half.

Onset.—In the lethargic group it was not uncommon to have the patients come down without fever. In some cases the patients remained afebrile for a week or more. This was particularly true of the lethargic Parkinsonian type. It was quite regularly noted in the delirious type, however, that fairly high temperatures were the rule. In one case of this type, the onset was so much like typhoid that until this was ruled out by laboratory examinations a diagnosis of typhoid fever was made. This patient started in with a nose-bleed, which was undoubtedly due to the acute rhinitis, and the temperature gradually went up in the typical typhoid way, reaching at the end of the first week 103° with very slight remissions, such as are characteristic of second week typhoid. In three of the cases the onset was with acute abdominal symptoms, cramps, diarrhea and vomiting characterizing the first week or more of the illness. In one case, which will be described in detail later, the onset was with negativism, Katatonic excitement with constrained attitude, and finally Katatonic coma. There were no cranial nerve signs or any of the distinctive features of encephalitis until the ninth day of the illness. The patient having been afebrile, was considered a case of Katatonic coma during this preliminary period.

In the lethargic type it is quite usual to have

early cranial nerve involvement, particularly diplopia, partial ptosis and other third nerve symptoms. The next most frequent early cranial nerve involvement is that of the facial. Occasionally in the delirious and comatose types, the cranial nerve symptoms come quite late in the disease. In the lethargic, delirious and choreic types the cranial nerve palsies are seen early. In two patients there was a peculiar petechial erythematous rash which was quite generalized but most marked over the chest and abdomen. It resembled a great deal the rash of scarlet fever, and in one case, namely, the Katatonic case which died, it persisted till death. In only one case of the fifteen was there any complaint of severe pain. It was quite common to have the patients complain of headache, pains in the occipital region and uncomfortable sensations in the neck, but in this case the pain was severe enough to necessitate opiates and was root-like in character. The pain was sharp, lancinating and referred to the extremities. Pain is not by any means a prominent symptom apparently of epidemic encephalitis. In two patients the onset was with tremor. In the little girl mentioned above the tremor was typically choreic. In the other, a woman pregnant five and a half months, there were many features in the tremor, which will be described later, suggestive of paralysis agitans.

Course.—In my experience the characteristic symptoms distinguishing the type of the disease have persisted throughout the course in a fairly definite way; in other words, the lethargic cases, while they showed varying degrees of lethargy or somnolence and were often wakeful for days or hours, nevertheless they failed at any time in their course to show anything but a mild, fleeting delirium. The delirious types very seldom were lethargic, although some of them lapsed into a typical coma vigil, with picking at the bedclothes and great motor restlessness, particularly before death. In the Katatonic case, which will be reported in detail, the Katatonic state continued throughout, the patient dying in deep coma. The average duration of the disease varies. In the lethargic type the course is quite prolonged, with remissions occurring which last from a few days to weeks. One of these patients is still in bed with definite symptoms after three and a half months. This boy has been examined several times before the staff of the Neurological Institute. In the delirious type the onset is quite sudden and the course fairly rapid. Recovery or death is usual in a few weeks. One patient, after a few days of delirium, with cranial nerve signs, became afebrile and showed a depression with agitation and negativism and was committed as insane to a private institution. The patient with Katatonic coma died within three weeks. One intensely delirious patient died in four days at the Italian Hospital. Another, a plethoric

woman of 50, with hypertension, died in deep coma in a week. One patient of the lethargic type never had a fever of more than $100\frac{1}{2}^{\circ}$ during the entire course of his illness and recovered in six weeks without at any time being considered dangerously or seriously ill. He was quite happy and joked with his nurses and attendants about his illness, and never showed anything except somnolence and cranial nerve involvement limited to the third and seventh nerves. In three patients there was a peculiarly persistent retention of urine, never of feces. In one, a young woman of 24, with a typically lethargic attack, practically afebrile, retention of urine was the most annoying symptom. She had to be catheterized for four weeks. There were no symptoms of myelitis and no changes, either sensory or motor, in any of these cases which would lead one to believe that the spinal cord was involved as part of the encephalitic process. Therefore, these patients make one feel that, granted that epidemic encephalitis is a disease particularly of the midbrain and basal ganglia, there may be in this region a center which presides over the voluntary control of bladder evacuation.

Prognosis.—Of the fifteen cases, all of whom have been seen in the last ten months, four have died, two are still under observation, one after three and a half months of illness, one has been committed to an institution and is still under observation, and eight have recovered. One of these recovered patients shows a typical paralysis agitans picture. The condition seems to be progressive rather than stationary. He is developing to an increasing degree hypertonus, suppression of automatic associated movements, salivation, tremor and voice monotony. To all intents and purposes, this man is a full-fledged case of progressive paralysis agitans of acute onset following an attack of epidemic encephalitis. This case is important, because such a result is a possibility in any group of cases and, therefore, while the prognosis as to life may be good in the individual case, the possibility of such an end-result as occurred in this individual should be borne in mind. It is quite usual to have all the cranial nerve symptoms disappear excepting the facial. In three of the patients, one of whom is now attending the Vanderbilt Clinic, the typical Parkinsonian face has persisted without tremor or other Parkinsonian symptoms. It is of course too early to venture the prediction as to whether this symptom is a permanent residual of the disease or not. In none of my cases were there any visual disturbances depending on involvement of the optic nerve. In only one case, namely, the patient who died in Katatonic coma, were there any fundal findings.

I have seen a complete left hemiplegia, plus Parkinsonian facies and tremor, in one clinic case not discussed in this group.

DISCUSSION OF THE VARIOUS TYPES.

1. *Lethargic Type.*—This is characterized by a more gradual onset with very little febrile movement and a degree of lethargy varying from mild somnolence to profound drowsiness, with difficulty in arousing the patient. When such patients are aroused they immediately regain contact with the environment, and while their reaction time and responses to questions and other stimuli are lengthened, the responses are clear and the sensorium intact in every way. Judgment and perception are good, and there are no hallucinations. In the five cases of this type, the earliest cranial nerve involvement was in the third pair. Diplopia and some degree of ptosis occurred in everyone. Paralysis of the internal rectus and difficulty in looking upward, with various changes in the pupils, were noted. In some the pupil was widely dilated at first and at other times much contracted, the first symptom corresponding to a paralysis of the third nerve, the second to an irritative lesion of the third nerve or paralysis of the sympathetic. There was difficulty in the accommodation reactions and in convergence, and the consensual and direct light reactions were either diminished or absent. In one case the left pupil was widely dilated at first, and in four days returned to normal, with return of all the reactions, the other pupil then becoming affected. The third cranial nerve involvement does not remain constant, and there may be changes from day to day. In my experience the next most frequent nerve to be affected is the seventh. The affection is of the lower motor neuron type, of course, and is often bilateral. Rather than an actual paralysis, there may be simply a smoothing out of the folds with the typical Parkinsonian facies either unilateral or bilateral. The next in point of frequency is an involvement of the ninth and tenth cranial nerves, with dysarthria, difficulty in swallowing, vomiting, hiccough (which in one case persisted for more than a week), respiratory arrhythmia, or dissociation, and slow pulse or irregularly intermittent rapid pulse. Examination may show deviation of the uvula and flattening out of the pillars and the palatal folds, with limitation in movement or paresis of the vocal cords. In two of the fifteen cases there was paralysis of the twelfth pair, with limitation in movement of the tongue or deviation in protrusion. The least frequent in my experience has been an involvement of the fifth cranial nerve and of the sixth pair. It is not uncommon, however, to get for a few days a diminution in corneal sensibility and therefore a diminution of the corneal reflex. In one patient the onset was with vestibular symptoms, which will be described when the case is considered more in detail. This discussion of the cranial nerve symptoms holds good not only for the lethargic cases, but is true of all the types, this subject

being considered here in some detail to avoid repetition. In my experience this group is not rich in pyramidal tract symptoms.

The course in the lethargic cases is prolonged, rather mild, with very little febrile movement. The cranial nerve symptoms are always definite and early. Of the five cases, three have recovered without residuals, one has the definite Parkinsonian facies and one is still under observation.

2. *Typhoid Delirious Group*.—This type may be and has been frequently mistaken, particularly in the first ten days, for typhoid fever. One patient, a girl of about 17, has had a cough and a nose-bleed, which persisted for three or four days, and, to make matters worse, she also had on the trunk and abdomen the petechial rash which was mentioned above, the attending physician being convinced that she was a case of typhoid fever despite the fact that the Widal and blood cultures were negative. I saw the patient on the eleventh day of her illness when she was in an acute delirium. The cranial nerve signs and the absence of enlargement of the spleen, together with the negative laboratory findings, made the diagnosis. In another case the onset had been with diarrhea and vomiting, with some complaint of headache. The temperature had not been charted, but the attending physician insisted that the rise in temperature had been gradual until on the fourth day of the disease it had reached 103°. The patient was wildly delirious and the diagnosis of typhoid fever had been made. The cranial nerve signs had been overlooked. The patient died four days later in the Italian Hospital. The Widal and blood culture was negative in this case and examination of the stools failed to show any typhoid bacilli. In three other patients of this delirious group the diagnosis was arrived at without difficulty by the attending physicians and confirmed later by observation in institutions. One of these patients was wildly delirious throughout the entire course of her illness, which lasted thirteen days, the patient dying in Bellevue Hospital. The temperature in these delirious cases ranged from 103° to 105° and was irregularly remittent and but seldom intermittent. The delirium is usually, at first, an occupational delirium, the patients seem to have an urge which manifests itself by desire to get up and be about and they live through their working days and in their delirium imitate their occupational duties and speak about them. Visual hallucinations, misidentification of persons, some euphoria, with singing or crying, are common. One patient, a pregnant woman, was quite fearful and apprehensive and her delirium was psychologically modified by her fear. She spoke continuously of the quarrel which she had had and in a worried voice said that if she did not go to work her husband's earnings would not be enough to keep the family, spoke frequently of the children and

her illness, made many attempts to get up and go to work and showed great apprehension and anger because she was not allowed to do so. This patient also had the paralysis agitans like tremor movements, which will be described later.

3. *Comatose Type*.—Considerable light might have been thrown upon the mechanism of the production of and the pathology of Katatonic cases if we had been able to get an autopsy in one of these three cases. In this patient the whole reaction to her infection was of such great interest that I am going to take the liberty of describing the illness in detail.

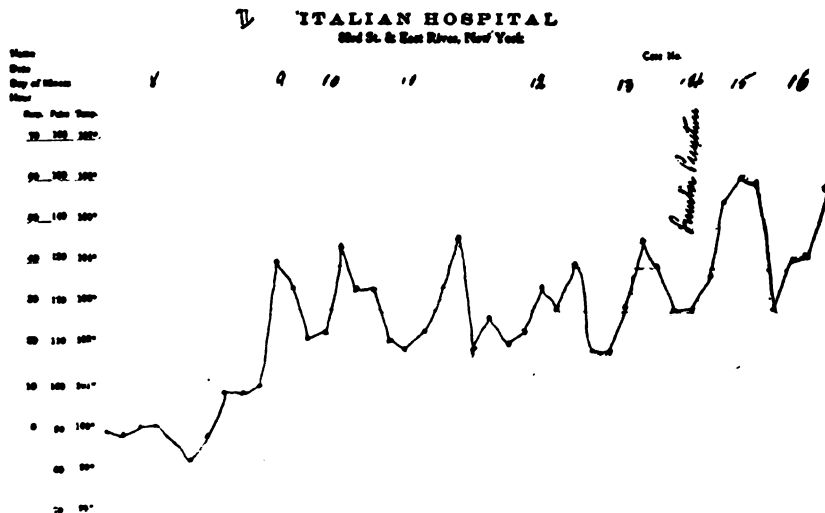
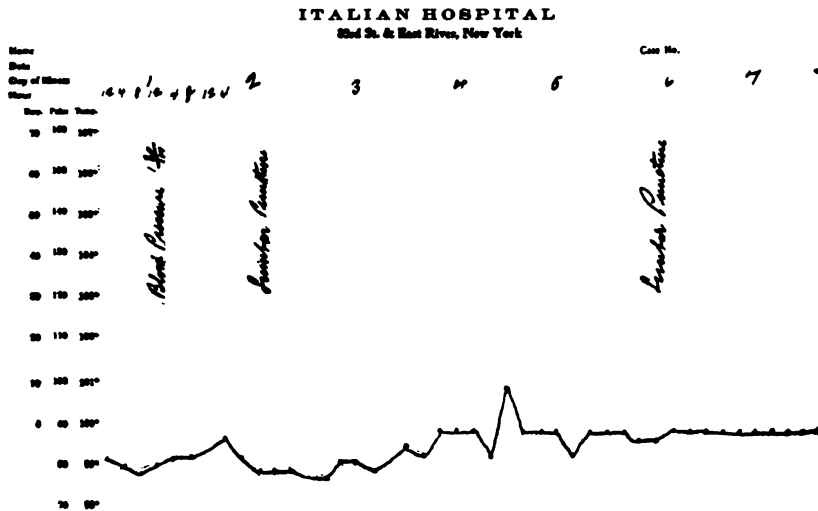
The history, as taken by Dr. Reuben, the house surgeon at the Italian Hospital, states that these symptoms came on immediately after "an argument at home." On January 8, 1920, following this misunderstanding with her husband, she began to be very talkative and restless, irritable and over-active. This condition lasted all night and well into the next day. She then had a series of convulsions which were almost entirely limited to the upper extremities and were not accompanied by unconsciousness. There was frothing at the mouth, the eyes were open during the attacks, and the patient heard and responded to questions. Between each of at least a dozen convulsions there was a period of motor quiet of from five to ten minutes. She took food, but following the last of her attacks it was found that she did not speak for many hours. After the convulsions ceased she paid a visit to the office of the family doctor, walking a distance of several blocks. She apparently quieted down under opiates, was put to bed and had seemingly improved to such an extent that no attention was paid to her for two weeks. One week before she was admitted to the Italian Hospital she began to lose power in her upper extremities and was unable to grasp or hold objects. She had a great deal of salivation. Her respirations became rapid and irregular for several hours at a time, but in the intervals she breathed without difficulty. She had been married about six months and was about four months pregnant. When taken to the hospital on January 29, 1920, the chief complaints were inability to walk without assistance, or to talk, inability to sleep, although the patient lies quietly in bed with her eyes open and absolutely motionless, difficulty of breathing in attacks lasting several hours, during which there is respiratory arrhythmia and occasional sensorious breathing. The patient was in a coma which was typically Katatonic in type when she was admitted to the Italian Hospital.

Physical and Neurological Status.—There was marked hypotonus and plasticity of the entire body, her face was greasy, which is really the only word to describe this observation, and there were no wrinkles or furrows in the brows or about the eyes, the mouth or the chin. Her

expression was mask-like. Saliva drooled from her mouth. She kept her eyes open and paid no attention to her surroundings. Occasionally, however, after much urging she would respond to questions and smile vapidly. On several occasions she made signs of recognition of her husband and relatives, and on two occasions during her stay in the hospital brightened up for two or three minutes, asked for food and drink, told the nurses that she was well and felt fine, and then lapsed into her coma again. There was no other cranial nerve involvement. Particular attention was paid to the oculomotor nerves, but no disturbance was found in their functions. The reflexes to light, accommodation and consensually were normal until about the tenth day of her illness. The patient's husband and her physician agreed that the anisocoria present, the left pupil being larger than the right, was a congenital condition and that they had noticed it many years before her illness. On the tenth day, however, the left pupil dilated very markedly, and there was complete paralysis of the left internal rectus, the left pupil did not react to light, accommodation, convergence or to consensual stimulation. The discs were blurred, the outlines a little hazy and the vessels enlarged. Later the right pupil became almost pinpoint and lost all reactions, and finally, for a day or so before death, there was complete mydriasis, with entire absence of all reactions and inability to move the eyeball in any direction. On the same day that the oculomotor nerve signs made themselves manifest there was complete paralysis of the tongue, the patient being unable to move it in any direction, although previously she had been able to do so. She also ceased to be able to swallow food. There was complete absence of the corneal reflex in both eyes. The mouth was half open and the jaw hung loosely downward, with no contractions palpable in the masseters. The jaw jerks were absent, the palate moved but very little upon pharyngeal stimulation. Until the ninth day, that is, during this practically afebrile period, there was no change from the normal in any of the superficial or deep reflexes. There had been no Babinski and no clonus and none of the Babinski modifications. In passing I might say that my experience has been that these pyramidal tract signs are not common, and when they are found they occur late and in the severe cases. On this day in placing the extremities, particularly the upper extremities, in various positions, it was noticed that the limbs and arms were held in whatever position they were placed, just as one sees in Katatonic states. This symptom had been observed practically from the first, but now in a few minutes the extremity fell to the bed by means of short cogwheel-like progression. There never was at any time a real tremor. On the

tenth day, also, the reflexes changed. It became impossible to elicit any of the deep reflexes not only of the jaw but also the upper and lower extremities. Whereas previously there had been a generalized plasticity, now there was a real stiffness and spasticity, with a definite Kernig's sign in both lower extremities and contractures in flexion of the elbows. Both thumbs were adducted into the palms and the fingers extended and adducted. No Babinski was obtainable until two days before the patient's death, when an undoubted Babinski response was obtained on the right side. At this time the left plantar reflex was entirely absent. It is my opinion that the absence of the deep reflexes is explained on the basis of the greatly increased hypertonus and spasticity. There was no rigidity of the neck and there were no convulsions at any time during the patient's stay in the hospital. The interesting points in the symptomatology of this case are the practically afebrile period for nearly nine days and the very late cranial nerve signs, if one excepts the masked-like facies. These made themselves manifest at the same time the change occurred from the plastic Katatonic state to one of spasticity and rigidity. In this connection it is quite interesting to note that the lumbar puncture taken on February 1, 1920, was completely negative. There was no globulin, five cells and of course a negative Wassermann. Another lumbar puncture done on February 3, 1920, showed four cells, a very faintly positive globulin. Lumbar puncture done several days before her death, however, showed a 2 plus globulin and 40 cells to the c.m. This finding in the spinal fluid corresponds with a fairly active meningeal irritation, symptoms of which were undoubtedly present at this time. The urine taken a number of times showed small traces of albumin and on two occasions showed acetone and diacetic acid and also a few hyaline casts. There was no sugar in any of the specimens. The blood examination showed a negative Wassermann, urea nitrogen on February 1, was 10 m.g. per 100 c.c., creatinin 1.2 m.g., non-protein nitrogen 28 m.g., sugar 0.0847 grams and the C.O.₂ by Van Slyke's method was 0.72. Other examinations of the blood failed to show any evidence of hyperglycemia or uremia. The blood count in this patient was done on January 31 and showed 19,600 white cells and 75% polys. The cells in the spinal fluid were lymphocytes.

Another patient with Katatonic symptoms was a young lady of 17 who also showed marked vestibular symptoms. Following an anxious period of nursing of the mother who had been quite ill with pneumonia, this patient began to complain of dizziness with external vertigo. Objects rotated at a furious rate to the right and upside down; she was very dizzy and had to lie down. She preferred to lie down or sit down with her head hanging very far backward and to



the left on a pillow. She would resent very much any attempt to move her. Examination was extremely difficult. She was resistive to care and stiffened if attempts were made to move her. She would not talk and refused to answer questions. A wild rotary and lateral nystagmus was found. Her whole body was plastic and waxy stiff. This patient later became quite delirious and noisy and had to be removed to the psychopathic ward at Bellevue Hospital, later being sent to a private institution. However, before she became mentally disturbed there were undoubted diplopia and other third nerve involvement which quickly cleared up.

The third patient of this group was the patient with hypertension (systolic 180) who died in coma at the end of a week. She was very hard to arouse and in deep coma practically all the time. Two days before death I was unable to elicit any deep or superficial reflexes. Cranial nerve signs were definite.

4. *Choreic Group*.—One of these patients was also quite delirious and presented the type of delirium which was described above. She also had a number of cranial nerve signs. Her case, however, was quite interesting, particularly as her disease came on rather acutely following the infection of the eyes and an altercation in the shop where she worked. The most interesting feature was the tremor. The tremor involved all four extremities. It was quite rapid, from six to eight excursions per second. It involved more particularly the thumb and fingers. The force and excursions were stronger and wider than is the case in paralysis agitans. This increase in strength and depth of excursion moved the larger joints at times, which is not characteristic of paralysis agitans. The tremor did not disappear during sleep and at times became generalized and took on some of the choreiform characteristics. It was constant but irregular in its manifestations. When it was generalized there was also spasmodic contraction of the abdomen and trunk.

In the young girl of 14 whose illness began after she was threatened by some school children,

Name
Date
Day of Illness
Hour

Resp. Pulse Temp.

70 160 1070

60 150 108°

59 140 105⁰

40 180 104



the tremor was characterized by flail-like, quick, jerky movements, particularly marked in the head and neck and the upper extremities, and at times so strong as to move the entire body. These jerky movements also involved the lower extremities at times, but never to the same extent as the upper. They were almost exactly like the movements of chorea. The spasmodic contractions were of groups of muscles and moved the joints and extremities and were not at all like the fibrillary contractions of paramyoclonus such as J. Ramsay Hunt recently described in some cases. There was no pain.

A third patient already discussed in the delirious group had a distressing hiccough and spasmodic contractions of the left abdominal musculature and apparently also of the left diaphragm. The diaphragmatic and abdominal tic was most persistent and annoying.

I desire to thank Drs. Reuben, Atona, Sante-ramo, Ippolito, Fermerelli, Mina, Bolognino, Tomasulo, Marchesi and Bonvicino for their aid in observing these cases.

THE PRESENT STATUS OF POLIOMYELITIS*

By HERMAN B. SHEFFIELD, M.D.
NEW YORK CITY.

OUR knowledge of poliomyelitis has been very slow and gradual in its evolution, notwithstanding the fact that two score or more epidemics† of the disease have offered unusual facilities for its careful study. The first scientific essay on the subject was written by J. Heine in 1840. Herein he attributes the affection to a lesion in the spinal cord. In 1851 Rilliez and Barthez contested this view and designated the disease as "Essential Paralysis of Children." In another contribution on the subject, in 1860, Heine reasserted his opinion, but failed to meet with authoritative support, until, in 1870, Joffroy and Charcot announced that they found distinct changes in the spinal cord consisting of "primary involvement of the ganglion cells leading to atrophy." Thereupon essential paralysis was replaced by "Spinal Paralysis in Children," or, in short, "Infantile Paralysis." In 1872 Duchenne called attention to the loss of reaction in the

paralyzed muscles to the faradic current, and, four years later, Erb demonstrated absence of reaction also to the galvanic current. Our knowledge was further advanced by Seeligmüller by furnishing an instructive contribution to the study of the pathogenesis of the contractures and deformities following poliomyelitis. All the while every trifling ailment and mishap was blamed for the origin of the disease in question, and although in 1884 Strümpell suggested that an infectious agent must play an active rôle in the causation of the affection, we still note that as late as the year 1893 no less an authority than Gowers relates several cases of poliomyelitis which he thought were due to catching cold from sitting on wet grass. Medin is deserving the credit for having systematized the symptomatology of infantile paralysis—in 1890—and we are indebted to Wickman for developing—in 1907—the epidemiology of the disease and for classifying it into several distinct types. Our knowledge of the etiology of poliomyelitis was greatly enhanced—in 1909—by Landsteiner, Popper, Flexner and Lewis, who demonstrated experimentally that monkeys are susceptible to this affection, and, furthermore, that in these animals one attack of paralysis prevents a second successful inoculation; in other words, produces an immunity against the disease. Further studies, moreover, established the fact that in human beings also one attack immunizes against another one, and that the serum of recovered monkeys, as well as men, contains a specific substance which is capable of neutralizing the virus *in vitro*. This neutralizing agent was shown to exist also in the blood of a large number of so-called abortive cases.

ETIOLOGY.

With these facts in view an entirely new light was thrown upon the mode of dissemination of the disease, since it became immediately obvious that poliomyelitis, like so many other communicable affections, is transmitted by an infective agent that follows the line of human contact and travel, and is carried not only by the victims of the disease, but by virus-carriers as well. Experimental and clinical evidence is gradually accumulating which tend to show that the virus of poliomyelitis enters the human body most frequently, even if not exclusively, through the upper respiratory tract and is carried to the cerebrospinal system by means of the lymphatics.

Owing to the not infrequent occurrence of paralysis among lower animals, *e.g.*, chickens and dogs ("distemper"), some authors thought it plausible to fasten the source of infection to this agency, but careful investigations undertaken during the 1916 epidemic by the Federal and State Boards of Health, with the assistance of expert veterinarians, utterly failed to substantiate that assumption. Moreover, it was conclusively

* Awarded the Merritt H. Cash Prize by the Medical Society of the State of New York, at the Annual Meeting held in New York City, March 22, 1920.

† In modern times the following great epidemics of poliomyelitis have been recorded: In 1905, in Norway and Sweden, together 2,000 cases. In 1907 the first great epidemic occurred in America, 2,500 cases having been reported in and about New York. In 1909 there were outbreaks in various parts of the United States and Cuba with a total of 2,343 cases. In 1910 an epidemic of infantile paralysis spread almost throughout the entire country, about 500 cases occurring in the District of Columbia, Iowa, Massachusetts, Minnesota, Indiana, and Pennsylvania, and about 400 cases in Maryland, New Hampshire, New York, Rhode Island, Virginia, Washington and Wisconsin. The epidemic of 1916 exceeded all previous epidemics in severity as well as in the number of cases, in New York State alone over 13,000 cases having been reported. The total must undoubtedly have been much larger, since a great many mild and so-called abortive cases must inevitably have escaped attention.

shown that in fowl, for example, the paralysis was the result of peripheral rather than central nerve lesions. There is much more scientific basis for the supposition that the disease may be conveyed by flies, since as has been repeatedly demonstrated by Flexner and Clark, among others, the common house-fly can carry the virus of poliomyelitis in a living and actively infectious state for forty-eight hours or longer, and abound, during the period of greatest prevalence of the disease, *i.e.*, the hot summer months. Now, if we accept the hypothesis of transmission of poliomyelitis by insects, more especially flies, then the probability of conveyance of the disease to the human body by means of food contaminated by house-flies and the like holds true with equal force. Be it remembered, the virus of poliomyelitis withstands both low degrees of cold as well as ordinary degrees of heat for long periods of time, and, when enclosed in albuminous matter, it resists drying for several weeks. In view of the aforesaid and the fact that the greatest number of victims of the affection are met in children under three years of age* whose diet consists principally of milk, this article of food must naturally come under the suspicion of being the purveyor of the infectious agent of poliomyelitis. Yet, after a very thorough investigation of the subject in question, the Committee of the Department of Health of the City of New York has arrived at the conclusion that food, and milk in particular, plays no part in the transmission of the disease. We must add, however, that, this exhaustive investigation notwithstanding, we would err greatly in ignoring the aforementioned hypothesis as far as prophylaxis is concerned, at least until such time as the identity of the infectious agent is definitely established. Unfortunately, thus far all bacteriological researches have failed to demonstrate the etiologic factor of poliomyelitis microscopically. It is therefore generally assumed that it is not bacterial in character, but belongs to the group of the so-called ultramicroscopic filtrable viruses. Experimentally it has been shown to be highly resistant to diverse destructive measures. It withstands glycerination for long periods of time and is not affected by 0.5 per cent of carbolic acid; it is but slightly influenced by freezing, at 2° to 4° C. for forty days; the virus is less resistant to high degrees of heat; it can be destroyed by a temperature of from 45° to 50° C. if exposed for half an hour. It can be destroyed also by a 2 per cent peroxide of hydrogen solution, by menthol and by corrosive sublimate.

PATHOLOGY.

During the last two decades, particularly, great advances have been made in the study of the morbid anatomy of poliomyelitis. Whereas originally the opinion generally prevailed that the lesions of this affection were essentially limited to the anterior horns of the spinal cord, it is now definitely settled that no portion of the cerebrospinal system may escape involvement, and, moreover, as is the case with other grave communicable diseases, the lesions are frequently disseminated throughout various other structures and organs of the body. As the upper nasal cavities are in direct communication with the meninges by means of the lymphatics which pass outward with the filaments of the olfactory nerve, and as the earliest changes are noticeable in the perivascular lymph spaces of the blood vessels of the leptomeninges, it seems reasonable to conclude that the virus enters the human body through the upper respiratory tract. Macroscopically, the meninges are usually found injected and edematous, and the brain and cord moist, translucent and edematous. The gray matter of the cord is also swollen and projects above the level of the white matter. Minute hemorrhages are often distinguishable in both the gray and white matter, the former often assuming a grayish pink hue. The cerebrospinal fluid is but little increased. Microscopically, the pathologic process is found to consist chiefly of a cellular exudation, hemorrhages and edema. The lesions are most pronounced where there is an abundance of blood vessels, hence in the cervical and lumbar enlargements, more particularly in the anterior horns of the cord and in the medulla. "The cellular exudate forms a sheath apparently completely surrounding the vessels for long stretches, and in many places the cells are so numerous as to form thick collars which seem to press on the lumen and thus exert a mechanical effect in obstructing the circulation" (Peabody, Draper and Dochez). A similar mechanical as well as toxic action is progressing in the intimal lining of the blood-vessels, the conjoint pressure soon leading either to hemorrhagic softening or anemia-pressure-necrosis of the infiltrated structures and gradual replacement of the ganglion cells by cicatricial tissue. Of course, this terminal pathologic stage is usually not reached where the pressure is early relieved by absorption of the hemorrhage and cellular exudate—and hence the large number of mild and so-called abortive cases, and the tendency towards spontaneous recovery. In recording his observations on human and experimental poliomyelitis Howe distinguishes three pathologic types of the disease: (1) Cases in which the lesions are limited to infiltration of the pia and blood vessels, the mesodermic tissue type; (2) cases in which the main feature is degeneration of the motor cells in the anterior horn, accom-

* Of 5,346 cases of poliomyelitis tabulated by the New York City Board of Health during the 1916 epidemic, the age incidence was as follows:

6 months or younger...	192 cases	6 years	245 cases
1 year	793 "	7 years	160 "
2 years	1,398 "	8 years	127 "
3 years	1,998 "	9 years	78 "
4 years	693 "	10 years	56 "
5 years	412 "	10 to 15 years.	94 "

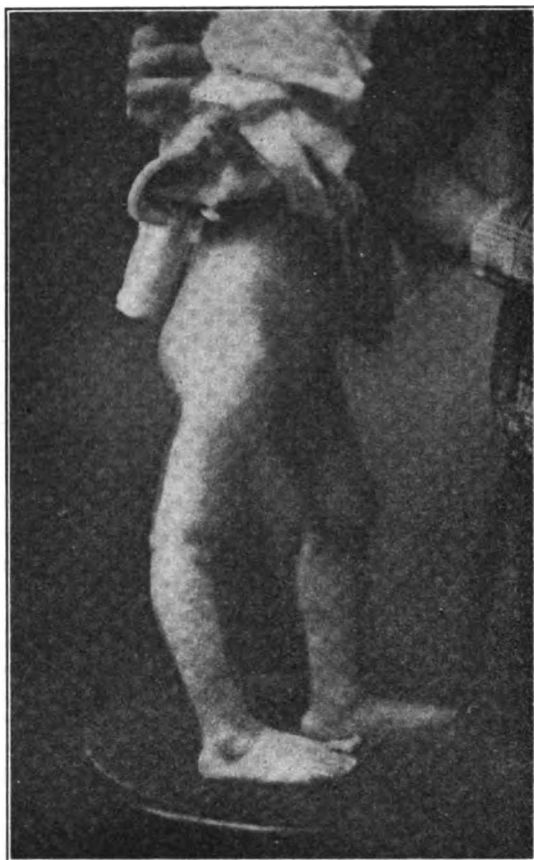


FIG. 1.—Poliomyelitis "Spinal Type;" lesion in lumbar enlargement; paralysis of right leg, atrophy and subluxation at the knee joint.

panied by the proliferation of neuroglia, the ectodermic tissue type, and (3) the mixed type. The first group represents the general reaction of the organism to the infection, manifested by changes in the central nervous system and the lymph tissues of the body. In the second group the changes in the central nervous system of man are polymorphous. The reaction in the ganglion cells and nuclei allows the recognition of no less than eight different forms in the degenerative process consequent to the poliomyelitis infection. The mixed type is usually encountered in human poliomyelitis. As already stated, the virus of poliomyelitis is productive also of extensive pathologic changes in the lymphoid tissues and parenchymatous organs. Peyer's patches and some of the mesenteric glands show lesions resembling those observed in typhoid fever. The superficial glands of the body, the tonsils, the thymus gland, the liver and occasionally the spleen are considerably enlarged. The affected muscles show definite signs of degeneration. Some of their fibres disappear entirely and others are shrunken, the whole limb being atrophied as a result thereof. Often the bones participate in this pathologic process.

SYMPTOMATOLOGY AND COURSE.

An affection based upon so vast and varied morbid anatomy must obviously manifest itself by an equally as complex a symptomatology, ranging between that of simple, local and often transient paralysis, and general, frequently fatal, toxemia. No wonder that prior to our full understanding of its pathology almost every type of the affection was described as a separate clinical entity, a disease *sui generis*. For that matter, even the present tendency to classify poliomyelitis into several distinct types is hardly justifiable from a pathologic point of view; and having had the opportunity to observe a great many cases during the last two epidemics and at other times, the author cannot help but feel that no one classification will cover all cases clinically. Hence our reason for not attempting to present one.

Initial Stage.—After an incubation period lasting from three to twelve days, and towards the end, indicated by indefinite symptoms of ill health, such as slight fatigue, irritability and anorexia, the temperature all at once rises, up to 104° F., the child complains of irregular, muscular pain, headache and sore throat or other symptoms of old-fashioned grip, or is seized with an attack of indigestion, with diarrhea and sometimes vomiting, in young children not rarely

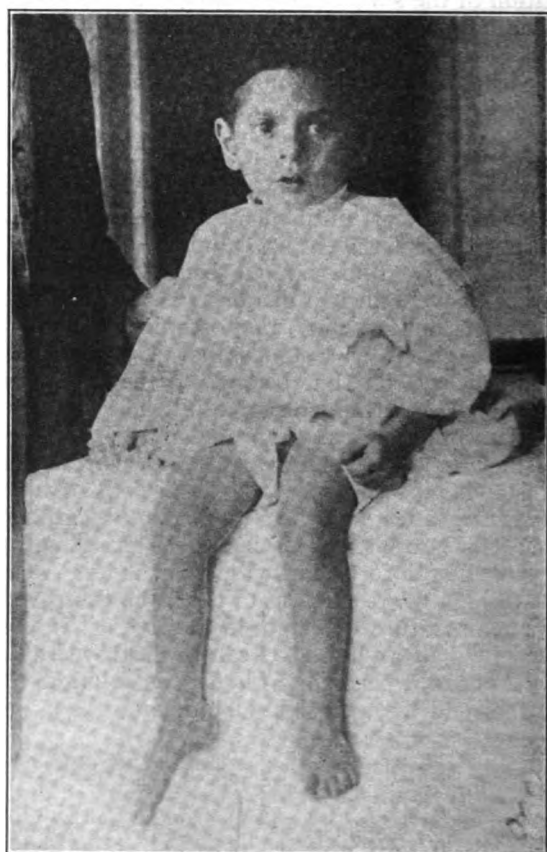


FIG. 2.—Poliomyelitis "Spinal Type;" lesion in lumbar enlargement; atrophy and right "foot-drop."

accompanied by convulsions. Physical examination reveals diffuse congestion of the throat, with or without a slight grayish deposit upon the tonsils, slight rigidity of the neck, especially on bending the head towards the sternum, marked paresthesia, muscular jerking or tremors, distinct drowsiness, and irritability when disturbed. The mind is usually clear even in grave cases. The heart's action is generally exaggerated, even when the fever is low. These symptoms may remain stationary for from 24 to 72 hours and then either show a tendency towards spontaneous abatement (*abortive type*) or get rapidly worse—heralding the advent of paralysis.

Paralytic Stage.—The paralysis usually sets in insidiously, is often preceded by progressive muscular weakness, and either remains localized or swiftly spreads to other parts of the body, the degree of severity and extent of the paralysis depending, of course, upon the gravity and seat of the lesion. In the majority of cases, especially during mild epidemics, the pathologic process is limited chiefly to the spinal cord (*spinal type*). In this event the paralysis usually involves the extremities alone, or, less frequently, the neck, abdomen, spine or chest as well. The paralysis

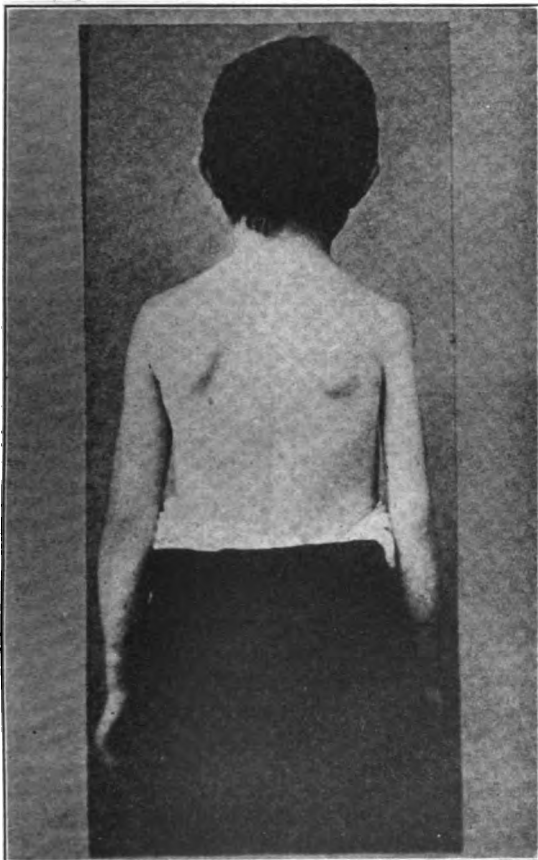


FIG. 3.—Poliomyelitis "Spinal Type;" lesion in cervical enlargement; paralysis of upper arm as well as right serratus magnus, "angel wing" deformity of right scapula; marked atrophy.

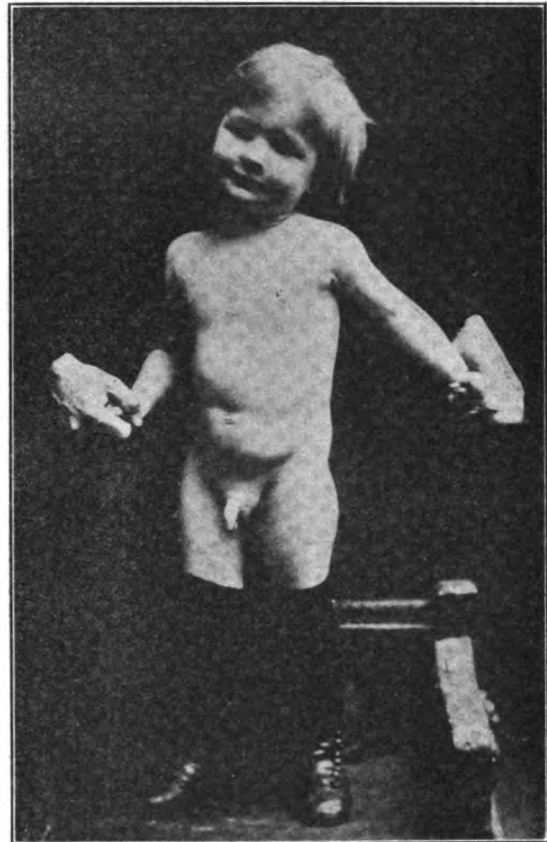


FIG. 4.—Poliomyelitis "Spinal Type;" lesion in cervical and dorsal regions; partial paralysis of muscles of the neck, abdomen and right thigh; atrophy.

may be partial or total. The extremities are usually affected in the following order of frequency: One leg, both legs, one arm, both arms, one leg and one arm on opposite sides or, more rarely, on the same side, both legs and one arm, both legs and both arms, and both arms and one leg. Occasionally the paralysis remains limited to a group of muscles or even to a single muscle, *e.g.*, the tibialis anticus, gastrocnemius, or deltoid, and is not rarely overlooked until atrophy has set in. When the muscles of the neck are implicated, the child is unable to hold the head erect; the latter drops (*neck drop*) either forward or backward, or sways from side to side. In paralysis of the abdominal muscles, owing to active intra-abdominal pressure by gases, there is "ballooning" of the affected muscles which contrasts strongly with the flatness of the intact muscles. With the spinal muscles affected, the patient shows a peculiar clumsiness in turning around or from side to side while lying flat on his back, and is unable to assume a sitting posture without assistance. The paralysis is ordinarily overlooked until frank scoliosis has made its appearance. Sometimes the paralysis manifests itself in stages, at intervals of several hours, so much so, that occasionally the muscles implicated first may already be



FIG. 5.—Poliomyelitis "Spinal Type;" lesion in cervical enlargement; "neck-drop."

on the mend while a new group of muscles may just about be attacked. Where the lesions are limited to the lower neuron the paralysis is flaccid in character, the tendon reflexes greatly diminished or lost, the reaction to the faradic current lost, while that to the galvanic current may persist for some time. Sensation is but slightly impaired. There is no tendency to acute decubitus.

In a small percentage of cases the paralysis, beginning with the lower extremities, gradually spreads upward (progressive or *ascending type*, resembling Landry's paralysis), involves the upper extremities, the external muscles of respiration, and the diaphragm, if the lesion reaches the upper part of the cervical cord. In this event exitus may take place after from two to four days as a result of respiratory failure. On the other hand, the paralysis may start in the arms and from here spread downwards (*descending type*, resembling transverse myelitis) to the lower extremities. In these cases we usually find paralysis of the vesical and anal sphincters, giving rise to urinary retention or dribbling and obstinate constipation or incontinence of feces respectively.

In another group of cases the inflammatory process extends to the medulla (*bulbospinal type*). The lesion is generally unilateral, exceptionally bilateral, and clinically characterized by partial or total paralysis of some of the cranial nerves, in addition to the manifestations observed

in the purely spinal variety of poliomyelitis. As a rule, the facial and abducens are affected, less frequently the glossopharyngeal and vagus, and occasionally also the hypoglossal nerve, in which event the patient presents not only facial paralysis, inward strabismus, and more or less marked respiratory difficulties (Cheyne Stokes' breathing, cyanosis and cardiac arrhythmia), but also disturbance of phonation and deglutition. These cases are usually very grave, nay, often fatal within a few days. In the absence of concomitant paralysis of the extremities one is apt to diagnose laryngeal diphtheria. Indeed, on several occasions the author was invited to intubate these cases. Where the cord remains intact and the lesion localized in the medulla alone, the tendon reactions are usually exaggerated, the limbs more or less rigid, and there is a distinct tendency towards *taxia (ataxic type)*.* The aforementioned symptoms are much more pronounced where the pathologic process invades also the pons (*pontine type*), and the condition is further aggravated by the usual concurrence of oculo-

* Some authors attribute the ataxia to a lesion in the cerebellum, the post-mortem findings, however, do not substantiate this claim.

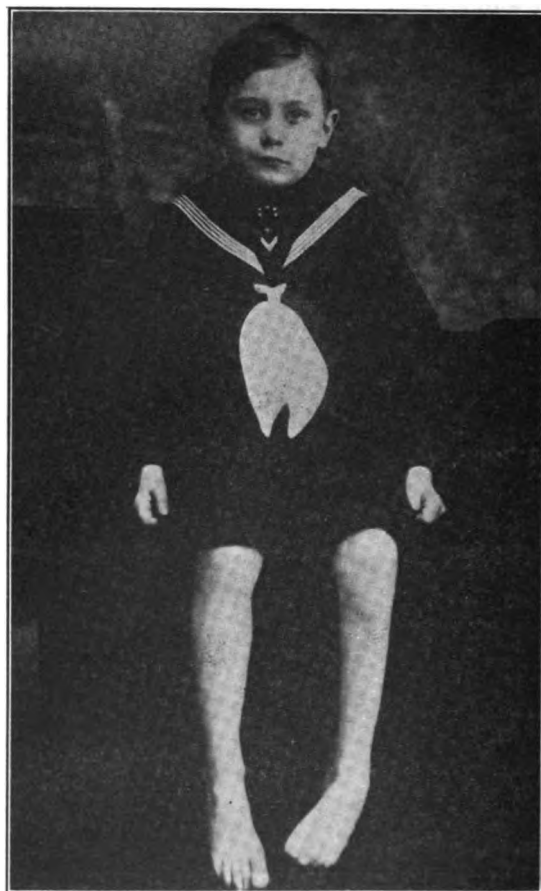


FIG. 6.—Poliomyelitis "Bulbospinal Type;" lesion in medulla; paralysis of left facial nerve, left forearm and left leg; deformity and atrophy.

motor paralysis, which may lead to complete ophthalmoplegia, and crossed paralysis or hemiplegia alternans.

During the recent epidemics ample evidence was brought forth to prove that the so-called primary polioencephalitis (Strümpell), instead of being a distinct clinical entity, is in reality a *cerebral* or *encephalitic type* of poliomyelitis. As is well known, this type of the disease is manifested by the predominance of meningeal symptoms, such as recurrent explosive vomiting, convulsions, rigidity of the neck up to opisthotonos, and marked stupor. Kernig's and Brudzinski's signs are usually inconstant and appear late, and seem to be due rather to the resistance on the part of the child to the painful flexion of the spine. After a day or two partial or complete spastic paralysis of one or several extremities supervenes, not rarely accompanied by involvement of the facial nerve. In some cases there is also marked inco-ordination of the extremities. The tendon reactions are usually greatly exaggerated. Advanced polioencephalitis is characterized by spastic paralysis, athetosis, deformity with but



FIG. 7.—Poliomyelitis "Pontine Type;" lesion in pons, medulla and spinal cord; paralysis of right facial nerve, left forearm and hand, external respiratory and abdominal muscles ("ballooning") spinal muscles and right leg; atrophy.



FIG. 8.—Same case as above showing also high degree of scoliosis.

slight atrophy and, later, possibly Jacksonian type of epilepsy and feeble-mindedness.

In the majority of cases pain, either spontaneous or on passive motion, forms a conspicuous symptom of acute poliomyelitis. As the pain often follows the course of the nerves, as in neuritis, these cases are sometimes grouped in a separate class—the *polyneuritic type*. According to Lovett, the pain and tenderness are sometimes marked enough to cause the paralysis to be entirely overlooked, and a diagnosis of rheumatism or scurvy to be made. In two cases under observation during the last epidemic hip-joint disease was diagnosed.

As already stated, a great many children fail to survive the acute phase of the affection. The mortality seems to vary with the virulence of the epidemic. Thus, whereas in the Massachusetts epidemic (1907-10) of 1,599 cases only 125 died, the epidemic of 1916 destroyed 3,310 young lives in New York State out of a total of 13,177 victims of poliomyelitis. The highest death rate, about 63 per cent, occurred among the cases in which the lesions extended to the medulla and pons, most frequently either as a result of respiratory failure in consequence of paralysis of the respiratory muscles, or secondarily to complicating bronchopneumonia. Most of them, about 80 per cent, succumbed during the first week of the onset of the disease, only 11 per cent in the second week, 3 to 4 per cent in the third week

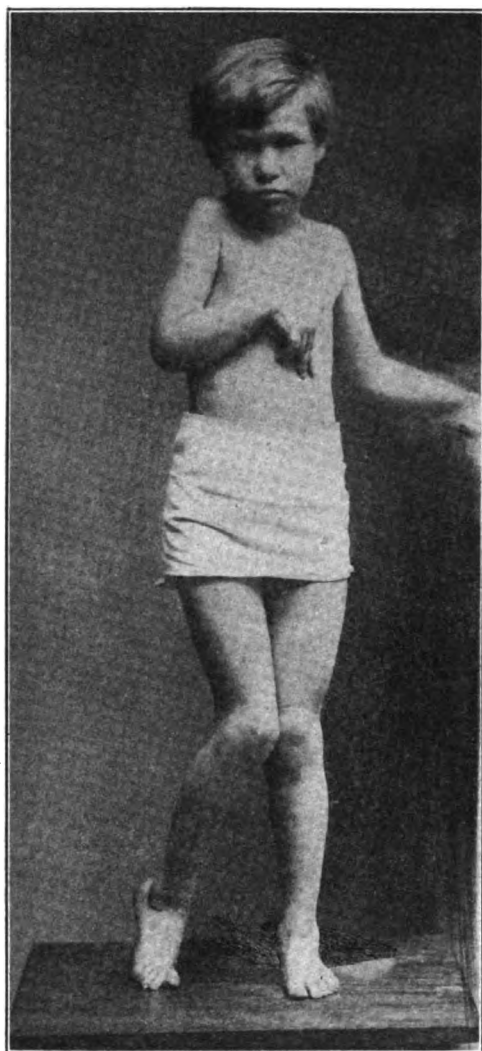


FIG. 9.—Poliomyelitis Cerebral, "Encephalitic" (polio-encephalitis, Strümpell. Type; lesion chiefly in motor region of cortex; spastic paralysis of right arm and leg, athetosis, deformity, with but little atrophy; feeble-mindedness.

and about 5 per cent sometime later, as a result of exhaustion and complications. The highest mortality was noted in children under five or over 15 years of age, higher among males, than females.

Convalescent Stage.—This stage starts with the subsidence of the acute symptoms, such as pain and fever, and with the permanent arrest of the paralysis. It corresponds with the stage when the excessive exudate in the brain and cord is getting absorbed, the pressure upon the vital structure is being spontaneously relieved to a greater or less degree and consequently some of the paralyzed nerves or muscles begin to functionate. The degree and extent of the initial paralysis is no criterion as to the final outcome of the disease as a whole. The author has watched

many children seemingly in a hopeless condition to recover almost completely, and *vice versa*, some apparently mild localized paralyses to persist for life, notwithstanding most scrupulous and scientific treatment. The muscles that fail to recover within about ten days after the acute attack promptly begin to show signs of atrophy (the limb is flabby, cold and cyanotic). Associated with the atrophy is reaction of degeneration. The response of nerve and muscle to the faradic current is usually lost, while the galvanic irritability persists, sometimes for a year or two after the onset of the affection. Owing to the laxity of the muscles and their inability to hold the articular ends of the bones in apposition, the joints soon become the seat of subluxations. As the paralysis continues, the trophic changes become more and more marked—the limbs lose their shape, often look like mere skin and bone, and the growth of the bones becomes retarded. Moreover, owing to the activity of the intact, antagonistic, muscles, sooner or later diverse deformities make their appearance. In cases where all the muscles of an extremity are uniformly involved, the limb remains free from deformity, but is limp and lifeless and hangs attached to the trunk like an artificial limb.

Permanent Stage.—The paralysis may be looked upon as permanent, if the case fails to improve after two years' careful treatment. Reaction of degeneration of the nerves and muscles is usually complete, and the deformities (talipes, scoliosos, etc.) are fully established. The deformities are generally less pronounced in the so-called cerebral type of poliomyelitis.

DIAGNOSIS.

Typical, spinal, poliomyelitis (*i. e.*, sudden more or less complete, flaccid paralysis of one extremity or several of them or of a group of muscles of the trunk, preceded by moderate fever and other symptoms of an ordinary cold or indigestion) usually presents no diagnostic difficulties, whether or not it is met with during the prevalence of an epidemic. If pain forms a conspicuous symptom, poliomyelitis may in the initial stage be taken for scurvy, rheumatic fever, or polyneuritis. Now, in scurvy we generally find: a history of a slow onset; tumefactions along the long bones, ribs and the bones of the head; sponginess and bluish, hemorrhagic, discoloration of the gums, and the immobility of the extremities due to fear of pain and tenderness, but not to actual paralysis. This latter symptom is characteristic also of rheumatism. Besides, in this affection, the pain is more acute and localized and usually associated with some swelling, especially about the joints. Furthermore, rheumatic fever is not rarely complicated by chorea and endo- or peri-carditis. Polyneuritis is very uncommon in young children, as a rule, follows

While the blood picture of patients suffering from poliomyelitis is not as specific as the spinal fluid, it is nevertheless of some diagnostic value if taken in connection with other available evidence. There is usually a leucocytosis of from 15,000 to 30,000, and the polymorphonuclear cells are increased at the expense of the lymphocytes.

Prophylaxis.—With the earliest detection of suspicious signs of acute poliomyelitis, the patient should be promptly isolated, and handled in the same manner as prescribed by the health authorities in other communicable diseases. During an epidemic vomiting, fever, headache, diarrhea, congestion of the throat, rigidity of the neck and drowsiness, should be looked upon as suspicious of poliomyelitis. When the diagnosis has been confirmed, the attendant should be quarantined together with the patient for about three weeks. If for financial reasons this proves impracticable, it is advisable to remove the patient to a suitable hospital. All discharges from the mouth, nose and throat should be received on cloths or toilet paper and immediately burned. The feces and urine should be disinfected prior to their disposal. The room of the patient must be screened to keep out flies, mosquitoes and other insects. Before lifting the quarantine, the clothing, bedding, utensils, etc., of the patient should be disinfected, and the sick-room and its contents thoroughly cleaned and aired. All those known to have come in contact with the patient should be carefully watched—for about twelve days—for the aforementioned suspicious signs of poliomyelitis, and, if need be, promptly isolated. During the period of observation children should not be permitted to attend school for about two weeks. Cleansing of the nose and throat twice daily with antiseptic solution, *e. g.*, dioxide of hydrogen 2 per cent., is worth trying. The same holds true of the internal administration of hexamethylenamine as a preventive of poliomyelitis, since it has been proved to find its way in the cerebrospinal fluid and to exert a germicidal effect. From ten to fifteen grains daily, in divided doses, will usually suffice. Whenever possible, individuals should occupy beds singly. The milk intended for infant feeding should be pasteurized.

No specific has thus far been discovered to combat poliomyelitis in any of its forms or stages.

Immune serum, supposedly efficient in preventing or arresting the progress of poliomyelitis in monkeys, has as yet failed to show any appreciable benefits in human beings. Nevertheless, for want of more effective therapeutic measures, its use should be encouraged, especially in grave cases. If utilized, we must be sure that the donor is free from syphilis. The serum is administered in the same manner as antimenigitis serum, by lumbar puncture and intravenously. It should be injected on three successive days in doses of from 15 to 20 c.c. The serum is valueless after the acute stage. In rare cases intraspinal injection of serum has been known to be followed by a reaction meningitis. As in other acute cerebrospinal affections, lumbar puncture is a sovereign remedy also in poliomyelitis, where symptoms of brain pressure manifest themselves. It may be employed once or twice daily, according to indications. Of medicinal agents, hexamethylene, sodium salicylate and sodium bromide, of each from three to five grains every four hours, will generally be found useful. Respiratory and heart failure should be treated with oxygen inhalations, and camphor and strychnine or caffeine hypodermically. The author believes to have obtained beneficial results from the administration of potassium iodide in from two to five grain doses every four hours; he assumes that the iodides aid in the absorption of the cellular exudation and thus relieve intraspinal pressure. Severe headache may be mitigated by an ice-bag to the head. High fever may be reduced by warm baths, which are also indicated in excessive cerebral irritation. Subdural injections of suprarenal solutions have thus far proved of no material benefit, and the same is true of intravenous injections of salvarsan.

2. *Convalescent Stage*.—After subsidence of the acute symptoms and complete cessation of the pain and tenderness, an inventory, as it were, should be made of the stationary damage to the nerves and muscles inflicted by the highly destructive virus. As a rule, paralysis in some form is left behind. Where the paralysis is partial or limited to single muscles, the "spring balance muscle test" may have to be resorted to, to determine with any degree of exactitude how much power there is still left in the affected muscles. This test, by the way, is also of great value to register in pounds, at certain intervals, the gain or loss in muscular strength after a certain method of treatment. The consensus of opinion of the profession is at present in favor of getting the patient in a sitting and, if possible, in an upright position, as soon as possible, provided the paralysis is not very extensive. Of course, this should be done only with the aid of suitable braces, to prevent deformities. Where the spinal or abdominal muscles are implicated, support should be furnished by means of an accurately fitting light corset, and, in cases where

the lower extremities are affected, the so-called "caliper splint" should be applied. Where the glutei are also involved, we have to resort to a walking frame and light crutches. In paralysis of the deltoid, the arm should be supported in a sling, and, to prevent permanent deformities of the forearm, the latter is put in a well-padded wire splint. The less burdensome the splints, etc., the better. Furthermore, it is very important not to fatigue the patient, whatever method of treatment is adopted.

To prevent early atrophy and to improve the impoverished circulation of the structures involved, massage, including vibration, heat, electricity and muscle training, including bath exercises, are of undoubted therapeutic value. The treatment should begin after the pain and tenderness, spontaneous as well as on passive motion, has completely ceased. The massage should be gentle, local as well as general, and should be applied once or twice daily for about twenty minutes at a time. Later the massage may be supplemented by light vibratory muscular stimulation. The patient should be very warmly dressed, and the affected limb should in addition be exposed daily, for ten minutes at a time, to dry heat obtained either from a large electric bulb or the numerous baking apparatus on the market. The benefit derived from the use of electricity has been grossly exaggerated, yet a mild faradic and galvanic current, applied for from five to ten minutes at a time, every other day, may hasten recovery by inducing mild muscular contractions, by improving nutrition and promoting conduction of nerve impulses. Muscle training or passive and active motion corresponding to the normal muscular action, is the *sine qua non* in the restoration of the muscular functions, but it requires a very thorough familiarity with the exact powers of each muscle or group of muscles. Otherwise, by exercising the muscles in the wrong direction, considerable harm will be done. Bath exercises also are very beneficial. It will sometimes be noted that where patients show no muscular power in an extremity, when put into the bath they are able to demonstrate some power in those muscles, the buoyancy of the water apparently overcoming the gravity of the limb. As the entire co-operation and concentration of attention of the patient is indispensable to its successful performance, muscle training is only applicable in children over five years of age. Furthermore, this mode of treatment is best entrusted to an expert in this line of work.

A number of clinicians claim to have obtained excellent results from the injection of strychnine in the paralyzed muscles. This treatment was originally recommended by Charcot. He administered, once daily, gr. 1/40 to 1/50. As strychnine in small doses is a useful general tonic, it can do no harm and possibly may do some good. It may advantageously be combined with the

glycerophosphate of iron. General supportive treatment, ample, nutritious food and fresh outdoor air are excellent adjuvants in the re-establishment of the dormant bodily functions.

3. Permanent Stage.—If after giving the aforementioned methods of treatment faithful trial without any appreciable benefit to the patient, but, on the contrary, the paralysis persists and the deformities become fixed, there is nothing else left but to attempt to correct the deformities by operative procedures. The profession is not agreed on the time when an operation becomes indispensable. Some surgeons advise waiting two years, others twice as long or even longer. Hence it is best to leave the decision of this important question to the good judgment of the individual surgeon. As to the choice of the particular operations, R. W. Lovett offers the following suggestions:

Talipes Equinus.—Stretching, tenotomy of the tendo-Achillis, if the anterior muscles have fair power. Transplantation of the extensor of the great toe or other extensors into the tarsal bones, anterior silk ligaments with or without tenotomy, tenodesis, arthrodesis.

Talipes Calcaneus.—Astragalectomy, tenodesis, arthrodesis.

Talipes Varus.—Transplantation of the anterior tibial, when that is active, to the outer third of the foot. Silk ligament from the fibula to the cuboid; astragalectomy, tenodesis, arthrodesis.

Talipes Valgus.—Transplantation of one of the peroneals to the inner side of the foot, silk ligaments from the tibia to the inner side of the tarsus; astragalectomy, tenodesis, arthrodesis.

Flexed Knee.—Stretching or open division of the hamstrings.

Hyperextended Knee.—In cases where the quadriceps is paralyzed and the hamstrings and the gastrocnemius are good, transplantation of one or two hamstrings into the tubercle of the tibia.

Knock-Knee.—Supracondyloid osteotomy (Soutter's operation).

Flexed Hip.—Fasciotomy, if severe.

Dislocated Hip.—Arthrodesis.

Shoulder.—Dropping of the arm away from the glenoid cavity, arthrodesis of the joint, silk ligaments.

In cases of deltoid paralysis with the pectoralis major active, the origin of the latter may be transplanted into the spine of the scapula.

The operations in the forearm, elbow and wrist vary greatly in individual cases. Arthrodesis of the elbow is useful, but the operation is not applicable at the wrist on account of the nature of the joint.

Scoliosis.—Treated in the same manner as scoliosis due to other causes than poliomyelitis.

It is essential to the success of these operations to select a surgeon who is thoroughly familiar with this work. But even in the best hands the results are not invariably good. This is especially true of cases which have been greatly neglected or treated by the numerous quacks who thrive upon the ignorance of the unfortunate people.

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TENOTOMY OF THE INFERIOR OBLIQUE MUSCLE.*

By JAMES W. WHITE, M.D.,

NEW YORK CITY.

IN presenting the subject of inferior oblique tenotomy my purpose is to cite the experiences gained and the deductions drawn from a rather large number of cases which have come to operation. During the past five years the writer has observed about seventy-five cases of inferior oblique spasm, and of this number about thirty-five have been operated. Adding to these ten cases of Duane's that I did not see operated, gives a series of forty-five cases which have come to operation.

Duane has generously placed at my disposal his series, seventeen of whom have been operated. I am also indebted to Knapp, Wheeler, Schoenberg and Hubbard for the privilege of examining seven of their cases before and after operation and for the privilege of adding these to my series.

In my own series of about fifty cases, twenty have come to operation with very satisfactory and uniform results with the exception of two cases, Case I in Type 2, and a case which I believe had an anomaly similar to this.

When a routine muscle examination is made the condition is quite commonly seen and is most commonly a secondary deviation due to a paralysis of the superior rectus of the opposite eye.

The operation was proposed by Landolt in an article in the *Archives d'Ophthalmologie*, 1885. He reported no cases, however, in which the operation had been performed. The next presentation of the subject was by Duane before the British Medical Association in 1906. This paper was not published, but is quoted at some length by Posey in his paper before the American Ophthalmological Society in 1915. In this paper he reported twenty-one cases, four of which were operated by Zentmayer. Todd reported a case before the Academy of Ophthalmology in

1916, and in the discussion of this paper Reber and Green each reported a case. Several other cases have been reported the past two years. During the past year fourteen cases have been operated at the Herman Knapp Memorial Hospital.

The technique of the operation described by Duane and reported by Posey in 1915 we have found advisable to modify slightly. It was observed that in several of our cases there was a partial return of function of the tenotomized muscle. Now, when the tendon is engaged on a squint hook it is brought up in the wound. All tissue is dissected away and the tendon is grasped by an artery clamp as close to the floor of the orbit as possible. The dissection is then carried well into the orbital tissue and a second clamp applied as far as possible in this direction. The tendon is then severed to the distal side of each clamp, thus performing a thorough tenectomy. Thus far this procedure has been entirely satisfactory. The cutaneous wound has healed by primary intention in all instances with no noticeable scar. A general anæsthetic is necessary for children, but local anæsthesia is sufficient for adults and very little discomfort is experienced.

The indications for tenotomy of the inferior oblique are:

(a) Paralysis of a superior rectus muscle more or less marked, associated with a spasm of the inferior oblique of the other eye. This occurs when, as is often the case in congenital paralysis, the paretic eye is used for fixing. The spasm becomes more pronounced as the eye is adducted and especially when turned up and in.

These cases naturally subdivide into two groups.

First.—Those in which the paralysis of the superior rectus is not associated with any consecutive spasm or contracture of the antagonistic inferior rectus in the same eye. (Type I.)

Second.—Those in which the paralysis of the superior rectus is associated with a consecutive spasm or contracture of the antagonistic inferior rectus. (Type II.)

(b) Paralysis of a superior oblique with a secondary spasm or contracture of the inferior oblique of the same eye. (Type III.)

The operation is undertaken for the relief of subjective symptoms, such as diplopia, headache, nausea and vomiting; and the objective symptoms of head-tilting, torticollis, disfiguring upshoot of the eye, vertical and lateral strabismus.

May I illustrate each type?

TYPE I.

Paralysis of the Superior Rectus without Consecutive Contracture of the Inferior Rectus.

Case 1. Mrs. R. A. M., age 28. Has turned head to the right since a child to avoid diplopia.

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

This has increased from year to year. V 20/20 R. & L. with $-0.25-1.00$ cyl. R. H. -20Δ (screen and parallax test) and 14Δ by red glass. In associated movements to the left the L. E. fixing, the R. E. shot up and in, while the L. E. lagged. On the tangent curtain the double images became much more widely separated as the light was carried up and left.

Tenotomy of the R. inferior oblique corrected entirely the upshoot. There was no hyperphoria remaining as shown by phorometer or red glass test and by screen and parallax test only 2Δ .

Case 2. Miss L. G., age 25. Myopic since a child and had a divergent strabismus develop when quite young. Has tilted head since she can remember. V 20/20 R. & L. with $-3.00-3.00$ cyl. Exotropia 20Δ R. H. 15Δ for distance. Exophoria 30Δ R. H. 15Δ for near. Convergence near point 85 mm. The head is tilted backward to the left. A tenotomy of the inferior oblique resulted in L. H. $\frac{1}{2}\Delta$ and a reduction of divergence from 30Δ to 19Δ . A subsequent tenotomy of both externi gave the following:

Esophoria 2Δ for distance. Exophoria 5Δ for near. Convergence near point 60 mm. She has binocular single vision and the head tilt is corrected. Headache, which had always been severe, is entirely relieved.

Case 3. E. S., age 9. This case had a convergent strabismus. She had worn full correction some years and came to the Herman Knapp Memorial Hospital after a double advancement had failed to relieve the strabismus, V 20/20 R. & L. with $\times 2.50$, R. H. 15Δ , esotropia 20Δ . Tenotomy of the inferior oblique relieved entirely the hyperphoria, the upshoot in associated movements and, at the same time, the remaining convergent strabismus. This case was seen last month and showed orthophoria for distance and near—with her refraction corrected.

TYPE II.

Paralysis of the Superior Rectus with Consecutive Contracture of the Inferior Rectus.

Case 1. S. C., age 9. Has had head-tilt and an upshoot of the R. E. since a baby. V 20/20 R. & L. Correction $+2.75$. Without his glasses there is a convergent strabismus and with glasses a divergent strabismus. R. H. 30Δ . In associated movements to the left the R. E. shot up. This increased rapidly as the eyes were turned up and left.

In eyes down and left the L. E. was decidedly lower than the R. E. Tenotomy of the inferior oblique relieved the upshoot and reduced the R. H. to 15Δ . This increased to 20Δ and some upshoot was still observed. On re-operation it was found that the inferior oblique had a double tendon, one having its origin at the usual site,

which was severed at the first operation, and the other about 2 c.m. to the outer side. When this was severed there was no upshoot remaining but a R. H. of 12Δ . In July, 1918, eleven months after the second operation, there was a R. H. 6Δ .

Case 2. M. B., age 7. When eight months old both eyes were seen to jump up and in, in associated movements. For the past four years there has been a divergent strabismus usually of the R. E. V. R. & L. 20/20 with $-0.50-1.00$ cyl. Esotropia 43Δ , L. H. 15Δ .

In associated movements to the right, the L. E. shot up and the R. E. lagged, while in movement to the left the R. E. shot up and L. E. lagged.

A tenotomy of the left inferior oblique reduced the hyperphoria from 15Δ to 5Δ . The upshoot is entirely relieved and the divergence is reduced. There still remains the upshoot of the R. E. in looking up and left. I shall next tenotomize the right inferior oblique and shall undoubtedly get an increase of L. H. This will be overcome by an advancement of the right superior rectus, and if the divergence persists an advancement of one or both interni, as is indicated at the time of operation.

It is in these cases where both superior recti are paretic, and both inferior obliques are spasmodic that double hyperphoria (anophoria of some) is frequently observed. When either eye is screened it deviates up behind the screen while fixation is with the other eye. When the screen is moved to the opposite side, this eye moves up behind the screen while the previously screened eye comes down to fix. This is more frequently seen when in making the screen test a prism is used which corrects the predominant right or left hyperphoria.

TYPE III.

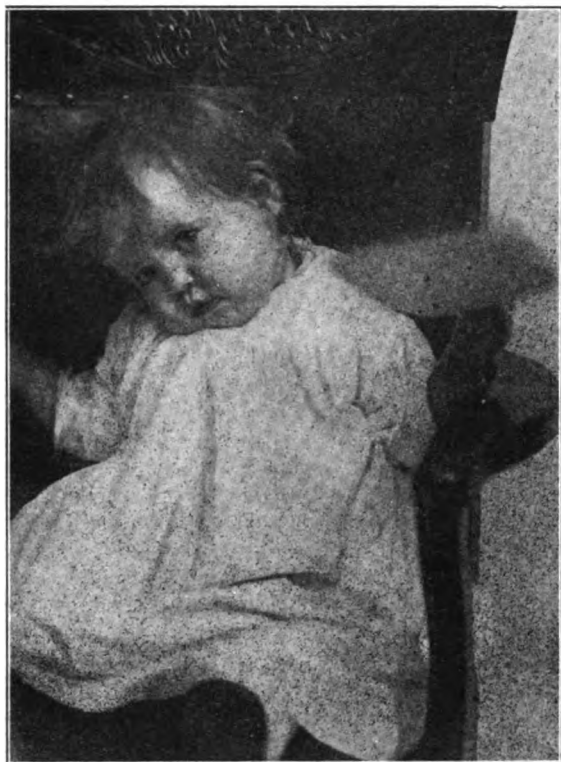
Paralysis of the Superior Oblique with Consecutive Contracture of the Inferior Oblique.

These cases are not frequently seen, only four of the cases observed being of this type.

H. H. has had headache for several years—V 20/20 R. & L. with -0.50 cyl., 90° . He has also been wearing prism, base down 3Δ R and base up L. R. H. 40Δ . As the eyes are carried to the left the R. E. shoots up. This is increased markedly in looking up and left. In looking down and left the R. E. acts only slightly.

A tenotomy of the inferior oblique reduced the R. H. from 40Δ to 16Δ . Here a tenotomy of the left inferior rectus. The associated antagonist to the right superior oblique must be done. As he has been decidedly improved by the tenotomy of the inferior oblique, and is living at a considerable distance, the second operation has been put off.

J. S., age 18 months. Torticollis observed when child was three to four months old.



1 and 2.—Before operation.
FIG. 1.—Usual position of the head.

GENERAL OBSERVATIONS.

Practically every case had some degree of head-tilting.

Four cases had torticollis. Three of these used the parietic eye for fixing, and one the spasmodic eye.

Torsion is not frequently found either before or after operation.



FIG. 2.—Head held straight. In looking up to the right, with head held, the R. E. is seen to remain on level while L. E. shoots markedly up and in.



3 and 4.—After operation.
FIG. 3.—Position of head much improved and much of the time held straighter than picture indicates.

Spontaneous diplopia is not infrequent, but diplopia can usually be elicited by a red glass and candle.

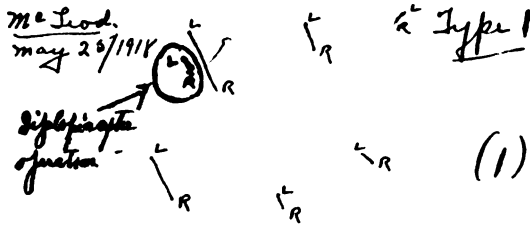
Two cases of convergent strabismus have been entirely corrected by the operation, one of these having previously had a double external rectus advancement with only slight effect on the strabismus.

Either esophoria or esotropia; exophoria or exotropia, are generally reduced from one-third to two-thirds of the original amount.

No imbalance of the ocular muscles has been observed, nor has the refraction been affected in any instance.

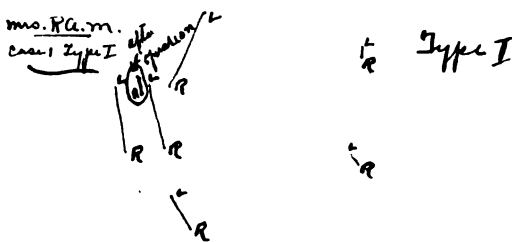


After operation.
FIG. 4.—In looking up to the right, the spasm of the Left Inferior Oblique has entirely disappeared.



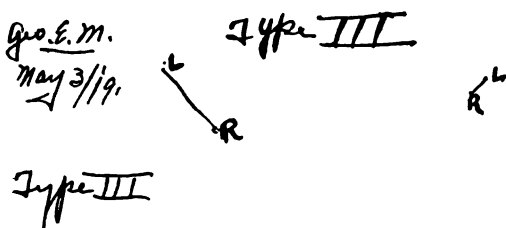
Diplopia taken on Tangent Curtain at 30 inches.

(1) McLeod had R. H. 5Δ in primary position, increasing to R. H. 18Δ in looking up to the left. Patient had head tilt, which produced fusion.



R.H. 24° Screen & Jmallop R.H. 14° red. gl.

Has had spontaneous diplopia since a child, which could be overcome by turning head to right. R. H. 24Δ (S. C. and paralox), R. H. 14Δ . Operation reduced diplopia to the amount in circle.



R.H. 10° in primary position

Paralysis of the Right Superior Oblique with spasm of the Right Inferior Oblique. R. H. 10Δ in primary position, and increasing in looking down to the left. Has always had head tilt and says that several members of family, different generations, have had head tilt. Recent case, to be operated in the near future.

SUMMARY.

The cases observed have led us to the following conclusions:

First.—In Type I a tenotomy of the inferior oblique entirely corrects the upshoot of the spasmodically acting eye and likewise the head-tilt and diplopia.

The amount of correction varies from 5Δ to 22Δ .

Second.—In Type II the tenotomy corrects the upshoot and reduces the hyperphoria from one-third to two-thirds of the original amount. However, an advancement of the paretic muscle or a tenotomy of its direct antagonist is usually necessary to correct the diplopia in the lower field. In some cases the wearing of prisms is sufficient to correct this.

Third.—In Type III a tenotomy of the inferior oblique is indicated first. It is often followed by a partial resumption of function of the paretic superior oblique. If after a few weeks the condition seems stationary, a tenotomy of the inferior rectus is indicated; but if the condition improves, several months should intervene before performing the second operation.

In convergent and divergent strabismus associated with a vertical strabismus it is most important that the vertical strabismus be corrected before attempting the correction of the lateral strabismus. If this is not done, the attempt to correct the latter either by operation or other means, often or perhaps usually fails; on the other hand, if the vertical strabismus is relieved by a properly conceived operation, the lateral deviation may disappear of itself.

NATIONALIZATION OF THE AGENCIES FOR THE HEALTH-WELFARE OF THE PEOPLE.*

By ALBERT T. LYTLE, M.D.,
BUFFALO, N. Y.

SYNOPSIS FOR ARGUMENT.

A—Independent, primordial, unalterable, fundamental, forces acting:

- (a) Self-Preservation—requiring
 1. Food—secured by
 - (a) Work.
 - (b) Money.
 2. Health—demanding
 - (a) Proper environment.
 - (b) Opportunity.
- (a-1) Self-Perpetuation—requiring
 1. Health—demanding
 - (a) Virile capability.
 - (b) Virile germ plasm.
 2. Food—secured by
 - (a) Opportunity.
 - (b) Normal development.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

- B—Dependent, powerful, forces acting:
- (a) Individualism.
 - (b) Commercial relations.
 - (c) Social relations.
 - (d) Governmental activities.
 1. Autocratic.
 2. Democratic.
- C—Axiomatic truths, applicable:
- (a) The better the health, the better the individual.
 1. Industrially.
 2. Socially.
 3. Politically.
 - (b) The better the individual, the better the community.
 1. Industrially.
 2. Socially.
 3. Politically.
 - (c) The better the community or society, the better the controlling Government.
- D—Problems of the democracy of the United States:
- (a) Health improvement and maintenance.
 - (b) Economic development and maintenance.
 - (c) Political development, equilibrium and stability.
 - (d) Social progression, equilibrium and stability.
- E—Deductions from investigations and occurrences:
- (a) Physical well-being too surely tending below a safe level.
 - (b) Economic situation too unbalanced.
 - (c) Political unrest too unreasoning.
 - (d) Social unrest desirable and justifiable but too impatient.
- F—Corollaries:
- (a) Health within narrow limits is purchasable.
 - (b) Health-welfare is a government responsibility.
 - (c) Health preservation and correction are the functions of a trained health-welfare profession.
 - (d) Health-welfare professional education, training and activity are governmental responsibilities of first importance.
 - (e) Government must properly safeguard the individualism that has made the United States what it is.
 - (f) Industry dependent upon efficient production and social stability, owing to modern conditions, is directly involved in the responsibility to secure and maintain a high average of health.

ARGUMENT FOR NATIONALIZATION OF THE AGENCIES CONCERNED IN THE HEALTH- WELFARE OF THE PEOPLE.

HOWEVER much it may be decried, the fact remains that, like all other social movements, methods of caring for the health-welfare of the people change with the changing order. The venerable, well-established, individualistic system of sickness-service, since its establishment, has changed but little with the progress of civilization. This system now is inadequate properly to care for the abnormal health and sickness situation of modern life. This inadequacy is shown by evidences found both within and without the activities of the professions.

The principal evidences found within are (1) progressive increase in preparation requirements for entrance to the study of the professions; (2)

progressive increase in professional requirements for obtaining the right to practise the profession; and (3) gradual assumption by the State of control over the preparation for and entrance to full professional privileges. Compared to requirements for entrance to technical industrial pursuits and to other professions, much greater time and money must be expended. Seven more years are given to preparation for the right to practise medicine than to preparation for entrance to technical industrial pursuits, all of which years are now economically unproductive; the additional expense and the lost time are capitalized at not less than \$20,000; preparation for entrance to other professions requires but from three to five years. Present-day standardized and legal requirements are in sharp contrast to those voluntary and individualistic ones of less than a century ago. The State progressively has interfered with the so-called individual liberty of the physician and his associated health-welfare—has progressively assumed greater responsibility in regard to the health-welfare of the people.

The evidences from without that point to inadequacy of the old so-called individualistic but now more or less government-controlled system are indicated (1) in the great number of fake health measures successfully offered the public and in the great amount of self-medication on the part of the whole people; (2) are shown in the active growth and unmistakable approval by the public of the many widely different, irregular, illogical, unscientific systems of sickness-cure, even in the face of increased legal requirement of special knowledge and preparation on the part of those practising the healing arts; and (3) are demonstrated in the recent astounding discovery that so great numbers of the citizens of our supposedly superiorly enlightened country fall far below accepted health standards.¹ This latter appalling situation has been shown by investigations of governmental departments and commissions, by reports of organized social welfare work, and by the millions of physical examinations made during the recent draft for the Army and Navy.

The firm establishment of democratic principles in our government and the wonderful industrial development of our people in more than great measure are due to the untrammelled exercise of intelligent individualism. In the United States in all matters pertaining to the health-welfare of the individual, upon the normal state of which social and industrial efficiency so much depends, the right of the citizen under the Constitution to consider his own physical ailments and those of his dependents as strictly his personal affairs, has been unquestioned until very recently.

¹ Dr. W. S. Rankin, President of the American Public Health Association at the 1919 meeting stated that—of the 110,000,000 people in this country, only 37,500,000 are fairly healthy and only 19,500,000 in full vigor, leaving 53,000,000 in a subnormal health condition.

But slowly, mass health and efficiency, dependent upon the health and efficiency of the unit, have entered into the social problem, so that today the people, through their government, are stating with more and more emphasis that the individual citizen has no inherent or constitutional right to so do as he pleases with the health and sickness of himself and his dependents that the health-welfare of his neighbor, of the community and of the State shall be jeopardized. The old idea that sickness was an inevitable condition—the expression of anger on the part of Omnipotence—to be endured without protest, has undergone change until today it is even claimed that "health is purchasable."

That the right development of those democratic principles upon which our government is founded; that the right progress of those principles upon which our civilization is based, are dependent upon the maintenance of a high average health standard of the whole people, must be inferred by the gradual assumption on the part of government of the right to interfere with the ancient privileges of the individual citizen in regard to health and sickness conditions and by the establishment of public health departments with ever increasing power of control over the life and activity of the citizen.

In industry both employee and employer are convinced that a high standard of individual health makes for greater labor stability, greater industrial production, greater individual income, much less industrial unrest and greater economic dependability.² In order to secure this group of desirable conditions, industry is seeking to solve the problems of unemployment, sickness and old age by means of co-operative insurance under government control. Several of the older governments of the world, as well as some of those more recently established, have instituted laws creating insurance schemes designed to accomplish these ends. Experience to date seems to prove that in respect to health those schemes wherever established have not solved the problems presented any more successfully than the old "hit and miss" individualism; nor has it been demonstrated unequivocally that their operation has improved in any way individual health-welfare service, while it clearly can be shown

that the development of the profession of medicine has not been forwarded.³

The one scheme which profoundly affects the health-welfare professions is State compulsory co-operative insurance against sickness, so-called "Health Insurance." Repeated unsuccessful attempts have been made in the Legislature of the State of New York to establish a health insurance that provides for compulsory co-operative money assessment and that grants certain medical benefits as a part of the right of the insured in addition to cash payments in case of sickness.

The ideals aimed at by health insurance in the United States are three: (1) A more just and equitable distribution of the financial loss due to abnormal health conditions; (2) the furnishing of earlier and better care in sickness, the development of greater prevention of sickness and the elevation of the standards of efficient health conditions from both economic and eugenic standpoints; and (3) the evolution of the care of the health, hygiene and sanitation of the individual from birth until death to a point where the efficiency of the individual, the virility of our civilization and the stability and greatness of our government not only may be maintained but shall progress toward a millennium.

Compulsory health insurance schemes to these ends will fail because of the inadequacy of their compulsion. They only provide for compulsion in regard to monetary requirements; they fail to provide for compulsion toward better sickness prevention and sickness service; and they fail to compel the insured to submit to better and continuous preventive, hygienic and sanitary requirements from birth to death. No compulsory health insurance scheme can improve upon the present-day individual voluntary sickness-service controlled by the evolutionary advances just mentioned, aided by public and private charity, unless all three compulsions are provided, or unless a new system of health-welfare service be evolved.

Compared to other professions and to industrial pursuits it is relatively rare in the United States for the direct descendants of a physician to become physicians. For some reason, which surely can be economic only, it is stated that, including deaths, quite 90 per cent of those entering the active practice of medicine are following some other more lucrative calling at the end of ten years.⁴ This surely should not be in a vocation that requires so much sacrifice before a real start can be made—one that leads to so great social advantages—one which offers such great scope to individualism. However, in sup-

² H. A. McClure, Lieutenant Commander, United States Navy, in a circular letter for the Navy Department issued in February, 1920, states—"That from 100 average healthy men taken at the age of 25, 36 will be dead before 65; 1 will be rich; 4 will be wealthy; 5 will be supporting themselves by work; and 54 will be dependent upon relatives or charity."

³ The *Saturday Evening Post* of March 6, 1920, on page 178, under the title, "Medicine in Industry" makes the statement that an investigator recently studied 10 industries where medical examinations prevailed and showed "that of approximately 120,000 applicants investigated in one year only 66,000 proved to have no disabilities of any consequence. Nearly 12,000 applicants were wholly rejected and 41,000 were employed with the full knowledge of their disabilities. Most of these latter workers were placed in selected positions where their infirmities would cause them the least handicap." That another investigator makes the statement that—"Medical work in industry indicates an average annual cost of \$2.50 per employee for medical examinations."

⁴ Majority Report of the Committee to study the subject of compulsory health insurance with special reference to its relationship to the medical profession, adopted November 26, 1919, by the House of Delegates of the Medical Society of the State of New York.

⁵ A manufacturing house published in January, 1920, that a United States Government report stated that the annual average income of physicians was \$3,907. (Correspondence with the United States Treasury Department and Department of Labor fails to verify statement.)

port of this melancholy statement it can be said that the annual loss from the ranks of the medical profession is hardly made good by the yearly influx of new doctors of medicine.

A more or less cursory inquiry shows that from 20 to 25 per cent of the active legal practitioners of medicine in the State of New York today are receiving public pay for full time, part time, or an occasional service rendered through departments established by law.

The following outline of a scheme is submitted in the belief that it is along the lines of the evolution now progressing toward State control of the agencies for the health-welfare of the people; that it will meet all the requirements of and objections to State compulsory health insurance; that it retains all the good features of individualism; that it prevents all the benumbing effects of State control, and that it will revivify the profession of medicine.

SYNOPSIS FOR OUTLINES OF SCHEME.

1. Establish compulsory periodic physical examinations of
 - (a) Citizen.
 - (b) Industrial concerns.
2. Establish an empirical health-threshold for
 - (a) Individual citizens.
 - (b) Industrial concerns.
3. Establish compulsory health-welfare attendance when citizen is sick or found below established health-threshold on examination by
 - (a) Enlisted health-welfare service.
 - (b) Private practitioners.
4. Establish compulsory health-welfare attendance when an industry is found below health-threshold by
 - (a) State health-welfare service.
 - (b) Private service.
5. Establish limit of income below which enlisted health-welfare service is free to
 - (a) Individuals.
 - (b) Industrial concerns.
6. Establish fee standards to be paid by State for the enlisted health-welfare service for
 - (a) Periodic examinations.
 - (b) Abnormal health attendance.
 - (c) Industrial attendance.
7. Establish tax on every citizen or resident to meet overhead and deficit.
8. Establish entire and complete control of education of four professions, medicine, dentistry, nursing and pharmacy.
 - (a) Present institutions.
 - (b) Future institutions.
 - (c) Grading.
 - (d) Registration.
 - (e) Pensioning.
9. Establish entire and complete control over finances and property used in the interest of health-welfare maintenance with slight exceptions.
 - (a) Present institutions.
 - (b) Future institutions.
10. Establish a co-operative sickness insurance scheme more evenly to distribute financial loss due to sickness.

OUTLINES OF A SCHEME TO NATIONALIZE THE AGENCIES CONCERNED IN THE HEALTH-WELFARE OF THE PEOPLE.

The creation of a United States Department of Health-Welfare with a political head in the Cabinet. The department activities to include regulation of the professions of medicine, dentistry, nursing and pharmacy and of such other callings as are intimately related to the health-welfare of the people. The department to include the present United States Public Health Service and to create such other bureaus as may be required, among them one known as the Bureau of Standardization, Qualification and Pension. Among the functions of this bureau would be co-ordination, correlation and standardization of educational requirements so as to secure national uniformity of grade for appointments to national service and in institutional and other activities of departments of health-welfare in the several States. The United States Department of Health-Welfare to control all sanitary health matters relating to the nation as a whole as well as correlating and co-operating similar State activities so that no conflict or duplication may occur.

The creation in each State of a State Health-Welfare Department with sub-divisions such as (a) administration, control and audit; (b) education, information, publicity, grading, appointment and pension; (c) public health, sanitation, engineering and physical properties; (d) laboratories and research; (e) practice, hygiene, diagnosis and therapeutics; (f) institutions, hospitals and dispensaries; (g) domiciliary and industrial service, and such others as the needs of the department may require.

The State health-welfare service to include doctors of medicine, doctors of dental surgery, registered nurses, licensed pharmacists, and morticians, sanitary engineers, architects, chemists, physicists, statisticians, accountants and others.

The Division of Education, Information and Publicity to be the *liaison* bureau between the State Department of Health-Welfare and the State Department of Education. All health-welfare educational institutions covering medicine, dentistry, pharmacy and nursing within the State to come within the custody of the State Department of Health-Welfare and to be operated as branches of the University of the State. The strictly school and college professional education and examinations, the examinations for grade and for appointment in the State health-welfare service to be the sole province of the State Department of Education; the actual appointments to be made by the Governor on recommendation of the State Department of Health-Welfare from lists furnished by the State Department of Education. The examinations

and educational requirements to be standardized by co-operation with the Bureau of Standardization of the United States Department of Health-Welfare, so that the grades eventually would be the same not only in the national services but in the Health-Welfare Department services of the different States.

The State Department of Health-Welfare, upon certification by the State Department of Education of the fitness of a citizen to begin professional study directed toward securing appointment in the health-welfare service of the State, to enlist each year for full time paid service as many as it is found the service annually may require. All appointees so entering the service must progress from grade to grade within very narrow time limits and until certified by the State Department of Education that such have qualifications equal to those required today for admission to the legal practice of the particular profession chosen. From this professional degree grade onward the enlisted individual to have the privilege of an honorable discharge from the State service with the privilege of engaging in the private practice of his profession subject to certain obligations of recall to the State service in case of emergency, thus creating the State reserve service. Periodic examinations for advanced grades to take place to be open to all eligible on an equal footing; such examinations for those grades in advance of that permitting entrance to the reserve service (the private practice of the profession) shall be conducted on a different system from that directing advance during the educational period.

Service in the State Department of Health-Welfare to be full time, part time, or occasional; the remuneration for the service rendered to be at the rate determined for the grade in which the individual is classified at the time the particular service is rendered.

The minimum age for enlistment in the Health-Welfare Service of the State Department of Health-Welfare to be not less than 18 years; the maximum age for enlistment to be not greater than 30 years if the study of the profession is then to be started. A maximum age at which an enlisted person must reach the grade permitting of private practice to be established proportionate to the entrance age. A maximum age to be established for contesting entrance to the higher grades thereafter possible to all those eligible professional people directly involved in the scheme. The salaries of full time enlistments to be progressive but according to grade attained and always to be such as to attract and protect capable individuals.

The State Department of Health-Welfare, with the State Board of Charities, to become custodian of and to control and manage all hos-

pitals, dispensaries and other institutions caring for the health-welfare of the people that are maintained by endowments, public funds and charitable contributions. The personnel of the attending staffs eventually to be determined by appointment from the active and reserve personnel of the State Health-Welfare Service. The State Department of Health-Welfare and the State Board of Charities to license, inspect and supervise all private hospitals or other institutions for the care of the health-welfare of the people.

A flexible standard of health to be established, preferably by the United States Department of Health-Welfare, above the minimum of which all individuals to be considered well.

Compulsory periodic physical examinations of every individual in the State to be established. The individual to have absolutely free choice as to the examiner, who, however, must be a graded practitioner of the State. If such examination is made by the State Health-Welfare Service, it is to be free for all those citizens whose incomes fall below a predetermined amount; this amount to vary according to the number of dependents and relatively in favor of those with a large number of dependents; otherwise the examination to be done at a predetermined standard fee in prescribed places and on uniform forms. As all practitioners legally practising in the State will be of minimum grade necessary to perform such compulsory examinations, those made by practitioners in private practice to be accepted by the State Department of Health-Welfare as if made by those actively in the State Health-Welfare Service; the fee for private practice examinations to be arranged between the interested parties.

Establishment of compulsory treatment, without limitation, other than recovery or death, of those compulsorily examined and found to be below the minimum standard of health, and of those taken sick. Such findings indicate that the individual's health is a menace to the health-welfare of his neighbor, the community and the State. The sick and below-standard individual to have free choice of the practitioner to manage and direct his case, the only requirement to be that the attendant must have the minimum grade for such service. All sick and below-standard individuals with incomes below a predetermined amount to be entitled to free attendance from the enlisted Health-Welfare Service of the State. All other such individuals to pay a predetermined standard fee to the State if selecting attendance from the State Health-Welfare Service. Those selecting private service to pay on individual contract as is done today. No practitioner in the Health-Welfare Service of the State to be compelled to give attendance beyond reasonable limits to be determined by the State Department

of Health-Welfare. All other or reserve health-welfare practitioners to have the right to refuse any case. Treatment and attendance to include institutional care as well as all other recognized methods. The private practitioner to have the right and privilege without discrimination to the proper use of the facilities of the several divisions of the Health-Welfare Department at proper cost.

A compulsory sickness insurance system to be established to provide funds from which certain sums are to be paid to the dependents of those individuals who, by reason of the establishment of compulsory treatment, are compelled to lose the normal income from the industry in which they were employed. The insurance premiums and payments to be determined along actuarial lines and not, as today, by haphazard public welfare and organized charity allowances.

To meet the cost to the State of such a scheme as outlined, the State Department of Health-Welfare to take over the proceeds from all endowments, incomes, investments, contributions and other sources of support now controlled by the educational institutions, hospitals and other institutions to be included in this scheme, as well as from any similar funds that in the future may be acquired for such purposes.

To meet any deficit arising from carrying out such scheme, every individual in the State to be taxed from year to year for its maintenance. This tax should be but a fraction per cent and but little in excess of the present-day cost to the State of the care of the health-welfare of the people; the tax should have a very favorable percentage relation to the economic value of the results obtained.

All individuals legally qualified to practise their respective professions at the time of the enactment of the scheme and involved in its operation to be graded by examinations arranged and carried out by the Regents of the University of the State; due allowance to be made for years of experience, for character of practice and for other factors. Those making application for appointment in the State Health-Welfare Service who are eligible and who may be accepted by the Department of Health-Welfare from among the graded practitioners then in active practice of their respective professions, to form, upon appointment, the first corps of the State Health-Welfare Service.

When institutions are taken over by the State no discrimination to be practised against those upon the teaching staffs of educational institutions and upon the attending staffs of hospitals and similar institutions who desire to continue thereon. All new appointments to be made from grade after examination.

APPENDIX A.

GRADING AND APPOINTMENT OF HEALTH-WELFARE PROFESSIONS AND EMPLOYEES OF TODAY.

1. (a) Grade individuals now legally practising.
 - (b) Annual registration.
 - (c) Crime if not graded and registered in first twelve months.
 - (d) Assignments on part time service as teachers and upon institutional staffs to be as they exist today for the period of enlistment, efficiency and progress considered.
 - (e) Enlist in State Health-Welfare Department service for terms of five years, full time, unless sooner discharged.
 - (f) Assignments on full or part time to industrial and domiciliary service for all others entering State service. Advancement in grade and new assignments open to all.
 - (g) All others to be in private practice, i.e., on reserve.
2. (a) Grade all students according to class standing.
 - (b) Present student body to volunteer for service to complete degrees with certain conditions.
 - (c) Those not entering service to enter private life with predetermined grade.
3. Grade other personnel of institutions.
4. Entering study with degree of A.B., or equivalent; allow advance of three grades.
5. Two years maximum time allowed in each student grade up to predetermined grade.
6. Beginners enlist for predetermined period unless sooner discharged.
7. Honorable discharge permits reinstatement at grade when discharged.
8. Illegal to practice outside of service until after reaching predetermined grade.
9. Dishonorable discharge—crime to practise—readmit at lower grade.
10. May resign and enter private practice, subject to emergency call.
11. May apply for reinstatement at grade; may contest by examination for higher grade up to predetermined grade.

APPENDIX B.

AGE, PAY AND GRADE FOR MEDICAL SERVICE ONLY.

Entrance Age		GRADE	ANNUAL PAY
Min.	Max.		
18	30	Junior Pre-Professional	\$500.00
19	31	Senior Pre-Professional	600.00
20	32	Sophomore Professional	700.00
21	33	Junior Professional	800.00
22	34	Senior Professional	900.00
23	35	Hospital Externe	1,000.00
24	36	Passed Hospital Externe	1,100.00
25	37	Hospital Intern	1,200.00

This line represents degree M.D., the close of student life and of first enlistment.

Entrance Age		GRADE	ANNUAL PAY
Min.	Max.		
26	38	Passed Hospital Intern	\$1,500.00
27	39	House Physician	2,000.00
28	40	Junior House Physician	2,500.00
29	41	Senior House Physician	3,000.00
30	45	Attending Medical Specialist.....	3,500.00
35	50	Junior Medical Specialist	5,000.00
40	50	Senior Medical Specialist	10,000.00
45	50	Passed Senior Medical Specialist	13,000.00
50	55	Consultant Medical Specialist....	13,500.00
50	55	Passed Consultant Med. Specialist	14,000.00
50	55	Senior Consultant Med. Specialist	15,000.00
65		Retired at 50 per cent pay of Grade subject to part time service or to full time on emergency.	

Grading of other professions on this schedule as type.

SOME COMMENTS ON THE PURPOSE OF THE PROPOSED HEALTH CENTER BILL AND SOME REASONS FOR ITS ENACTMENT.*

By **AUGUSTUS B. WADSWORTH, M.D.,**

ALBANY, N. Y.

THE increase in knowledge of the medical sciences in recent years has become so great, has progressed with such rapidity, and has come to cover such a variety of subjects, that it has long since become impossible for any one man to keep abreast of all the branches of medical work. Furthermore, large experience and great technical skill and dexterity are required as never before in any lines of laboratory and clinical diagnosis of disease and in the practice of medicine.

A wide general educational training is required of physicians, for medical science is not only closely related to but is absolutely dependent upon a knowledge of several collateral sciences, such as biology, physiology, chemistry, physics and bacteriology; and, furthermore, full knowledge of the progress in medicine is only possible if one is familiar with one or two of the modern languages. It has accordingly come about that specialization in medicine has developed to a high degree, and there is now a vast difference in many cases of sickness between the results obtained in treatment by a highly qualified specialist using all the resources of medical science and those ordinarily obtained from treatment by a general practitioner with few or none of these aids.

The complete and accurate diagnosis of disease is almost always difficult, often at best is only approximate and demands all the resources of modern medicine, including the aid of experts for its accomplishment. Experience has further shown that the best results in diagnosis and treatment can only be obtained by the co-ordinated efforts of a group of specialists working together. This association has come to be known as "group medicine." There is no place in the world where this kind of work has been developed to such a remarkable extent and with such signal success as at the Mayo Clinic in Rochester, Minnesota. There, in a small country town, in an agricultural district, has been built up, largely as a result of the employment of this method of practice, the most important surgical clinic in the world, the activities of which are conducted at present by more than 160 physicians and surgeons, many of them highly trained experts in the various phases of medicine and surgery and in the contributory sciences. To this place 60,000 or 70,000 people go each year.

It is not usually recognized that while medical science has made extraordinary advances during

the last twenty-five years, the benefits resulting from the new discoveries are at present available, generally speaking, to a very small fraction of the population only. It is only in the larger centers of population, and especially in connection with teaching institutions and large hospitals, that the best type of modern medical and surgical practice is generally found. Furthermore, it is noteworthy that while a great advance has been made in the larger cities, in many of the smaller cities and in the rural districts, on the contrary, for a number of reasons the conditions of medical practice have been changing, not for the better, but rather for the worse. Some of the reasons for this are as follows:

(a) The number of physicians in practice in small cities or rural districts is steadily decreasing. Only one-half as many physicians are now being graduated each year from the medical schools of the country as were graduated twenty years ago, and the number of medical schools has decreased more than one-half. The requirements for graduation and the quality of teaching in the remaining schools have greatly improved; but it is the general opinion of teachers of medicine that the quality of men who are taking up the study of medicine has not kept pace with the advances in medicine.

The rewards in the practice of the profession are not commensurate with the long period of study required, the cost involved, and the self-sacrificing life which the practice of medicine entails. To commence the study of medicine at the present time in New York State, a student must not only have been a high school graduate, but must have had at least two years' instruction in an institution of collegiate rank, including courses in biology, physics, chemistry, physiology, psychology, and at least one modern language. A four years' course in a medical school is then required, and at least one and often two years' internship (without compensation) in a hospital. After receiving his degree, before a graduate in medicine can undertake to practice, he must take a licensing examination before the State Board of Medical Examiners. In other words, after a student has finished the course in one of the best high schools he must continue his work for seven or eight years before he can commence to earn his living, and then he learns that the compensation in all professional positions open to physicians is totally inadequate and relatively much lower than that of other professions. More than this, to fit himself further for a successful career, and to gain the experience which is necessary for the successful private practice of medicine, he is expected to serve without compensation for most of his professional life on the medical staff of a dispensary, a hospital or other similar institution. The medical graduate is generally fortunate if he succeeds in making his living after three to five

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

years of practice, when he will probably be more than 30 years of age.

More than one-half of the health officers of the State of New York receive as compensation for their health work less than \$100 a year. Fifty-eight districts of the State have appealed to the Health Department to send them physicians, as they were totally without medical service. An investigation by the State Department of Health in one typical rural county where there were fifty-two physicians showed that these physicians had been in practice on an average twenty-eight years, and that during the last ten years only four new physicians had commenced practice in the county. It requires little vision or imagination to see what will be the condition in that county ten or twelve years from now unless some change in the situation is brought about.

(b) Not only is medical service wanting in many districts, but trained nurses are also lacking, and where they are available it is becoming more and more impossible for the average individual to obtain or to pay for their services. Many of the trained nurses in the cities and rural districts are now receiving \$6 per day and board for twelve-hour service. This means that in case of serious illness two nurses are required and the cost is \$12 a day plus the board of the nurses. When this expense is added to that of medical services, medicines and medical supplies, a daily cost of \$20 or more, possibly \$25 or \$30 per day—an amount which the average person cannot afford to pay.

(c) Domestic servants are no longer to be obtained except with great difficulty and sometimes not at all in the smaller cities and the rural districts; and when people are seriously sick, owing to the lack of physicians, nurses and domestic servants, it is becoming more and more imperative that if they are to receive even ordinary care they shall be removed to a hospital. The hospitals available are often inadequate and generally are not so organized as to give the best kind of medical and surgical service. Hence, the broad purpose of this bill is to make efficient medical and surgical practice more generally available; to provide for physicians more adequate compensation for professional service; to insure better quality of medical and surgical care, and to furnish State aid so that the health centers described can be provided, their medical and surgical work can be standardized, through the State supervision, and thus a higher quality of professional service assured. To aid further in securing this end, highly qualified visiting consultants are to be made available by the State Department of Health to assist local physicians in diagnosis and treatment of difficult and obscure cases, and modern laboratory facilities of all kinds, auxiliary to the service of the State Laboratory, are to be provided.

It is confidently believed that this plan is not only practicable and desirable, but also that some plan of this sort will be absolutely necessary if industrial workers, inhabitants of rural districts, and the great proportion of people of moderate means are to have adequate medical and surgical care, which at present they do not receive and cannot command. It is further believed that the plan here set forth will improve materially the health of the districts in which it is put into effect, will contribute immeasurably to the public welfare, as well as to economic and industrial prosperity, and that its cost will be insignificant as compared with the benefits to be derived.

It should be emphasized and distinctly understood that physicians rendering service in connection with the hospitals, clinics, laboratories, and all the health activities involved in the plan should be properly compensated; otherwise the decrease in the number of physicians and deterioration in quality of service, which has already been made plainly manifest in some districts, will surely continue, greatly to the detriment of the people of the State. It is self-evident that every government owes to its people not only facilities for education, but also physical resources for the prevention of disease and the treatment of sickness adequate to and approximating in quality the high standards which the progress of medical science has made available.

The enactment of this bill and the establishment of such health centers would greatly aid in the co-ordination of all the public health and public welfare activities of the district; would prevent overlapping of effort, promote economy in administration and make possible the extension of an efficient health service to every portion of the district.

It would also contribute materially to the improvement and the extension of all health activities and would render them far more effective.

There is a further argument in favor of the enactment of some legislation of this nature, viz., that the funds for the initiation of this greatly needed work and for its support will be derived, first, from local community appropriations; second, from the payment for services by the recipients (in proportion to their means) and third from State aid. Furthermore, the moneys thus raised will be spent in very large measure for the work, and not for administration, as has been the case too often in many plans for social betterment.

MEMORANDA AS TO THE PROVISION OF THE BILL.

1. To provide for the residents of rural districts, for industrial workers and all others in need of such service, scientific medical and surgical treatment, hospital and dispensary facilities, and nursing care, at a cost within their means, or, if necessary, free.

2. To assist the local medical practitioners by providing:

(a) Facilities for accurate diagnosis by a co-ordinated group of specially qualified physicians and

surgeons, both for hospital patients and for out-patients.

(b) Consultations and advice as to treatment by medical and surgical experts.

(c) Clinical, bacteriological and chemical laboratory service and X-ray facilities at moderate cost or free when necessary.

3. To encourage and provide facilities for an annual medical examination to detect physical defects and disease, and to discover conditions favorable to the development of disease, and to indicate methods of correcting the same.

4. To provide or aid in securing adequate school medical inspection and school nursing service. (In co-operation with the Department of Education.)

5. To secure or aid in securing better enforcement of the public health law and a more effective administration of public health activities within the area served.

6. To provide a public health nursing service adapted to and adequate for the community served.

7. To aid in securing the dissemination of information in regard to public health throughout the area served.

8. To aid in securing adequate compensation for medical and surgical care rendered in hospitals and clinics, in order that efficient service may be everywhere available.

9. To provide laboratories, group diagnosticians, consultants and hospital facilities in the smaller cities and rural districts, and to counteract the growing tendency of medical practitioners to remove to larger centers, and to attract to and to retain in the practice of medicine in these communities a larger number of qualified practitioners of both sexes.

10. To provide medical libraries, including books, pamphlets, periodicals, leaflets, exhibits, moving picture films, and kindred educational facilities, with halls for meetings if needed.

11. To provide hospital and other necessary resources for dealing promptly with epidemics.

12. To reduce illness and disability among the industrial workers of the State by providing prompt and accurate diagnosis and efficient treatment for sick and injured workers and the members of their family.

13. To co-ordinate public health activities within the districts.

Health Centers:

1. A health center may consist of the following parts, any one or more of which parts may be established at one time with the approval of the State Commissioner of Health and the formulation of a general plan for the whole center.

(a) *Hospitals*: The erection of new hospitals or arrangements with other institutions, or both, so that they shall form essential parts of the center. Such hospitals may include as units thereof existing or hereafter established hospitals or pavilions for the care of tuberculosis, for cases of other communicable disease, for children, for cases of maternity and mental diseases, and for other groups. Existing tuberculosis hospitals may become parts of the health center of a city or county by which they may have been established.

(b) *Clinics for Out-Patients*, including especially those now regarded as public health clinics, such as those for tuberculosis, venereal disease, prenatal and child welfare, mental and nervous diseases, and defects and clinics for school children, dental clinics, and also medical, surgical and diagnostic clinics.

(c) *Clinical, Bacteriological and Chemical Laboratories*, auxiliary to the State Laboratory, and X-ray laboratories with services at moderate charges, or free, affording modern laboratory facilities needed in the diagnosis and treatment of disease.

(d) *District Health Service*, with a district health officer and deputy health officers in various parts of the district, such districts to be either a city or county, or a consolidation of two or more existing health districts (such consolidation to be approved by the State Com-

missioner of Health). The present health officers in these districts shall act as deputies during their present terms of office. In the subsequent appointments of deputies in the various portions of the districts, persons residing therein possessing the qualifications prescribed by the Public Health Council shall have preference. Each local health board shall appoint for its town or village a deputy to the health officer of the health center district.

(e) *Public Health Nursing Service* for all parts of the district.

(f) *Center for School Medical Inspection*, with proper medical supervision and facilities to enable practitioners to provide adequate treatment for all school children showing physical defects or disease.

(g) *Headquarters for all Health, Medical, Nursing and other Public Welfare Activities* of the district which wish to utilize the center.

2. The locations, sites, plans and initial equipment of the health center shall be subject to the approval of the State Department of Health. The State Department of Health and the State Architect shall provide model plans for such centers for any community requesting them.

State Aid to Health Centers:

1. To be granted for each hospital bed constructed or provided for under this statute:

(a) For new construction and equipment of hospitals, one-half of the cost to be paid by the State, such payment not to exceed \$750 per bed, and beds for the purpose of this provision to be in proportion not in excess of one to each 500 of the population.

(b) A grant of 75 cents per day for every free patient maintained in any hospital operated as a part of a health center.

2. To be granted for clinics and annual medical examinations:

(a) A grant for the creation of out-patient clinics equal to one-half of the initial cost of establishment, the amount to be paid by the State for this purpose not to exceed \$5,000 per clinic, and 20 cents for each free treatment in such clinic; one such center for each district, provided that in counties or cities or districts having more than 50,000 population there shall be not more than one health center per 50,000 inhabitants or major fraction thereof.

(b) A grant of 50 cents for each free, comprehensive, annual medical examination made at the health center.

3. *For the Maintenance of Laboratories*. A grant from the State of one-half of the annual cost of maintenance of laboratory of health center, the sum to be paid by the State not to exceed \$3,000 per annum for each laboratory, and \$1,500 toward the initial installation and equipment of such laboratory.

4. *For Salaries of Deputy Health Officers*. A grant of 10 cents per capita per annum toward the salaries of deputy health officers in health districts having less than 1,500 population, and of 5 cents per capita per annum in health districts having a population between 1,500 and 3,000, in addition to such salaries as they are entitled to receive from the local treasury.

5. The total annual grants for the construction of hospitals and clinics shall not be in excess of \$2,000,000, and for the maintenance and operation not in excess of \$2,000,000. Salaries and traveling expenses of consultants and experts employed by the State Department of Health, and other expenses necessarily incurred by the State Department of Health in the enforcement of this law, shall be paid from the sum appropriated for grants toward maintenance and operation of health centers, this sum not to exceed \$250,000 per annum.

The District Health Officer may be the superintendent of the hospital and general director of health of the district and of the hospital and medical activities connected therewith. The qualifications for district health officers, deputy health officers, superintendents of hospitals and medical activities, chiefs of clinics and other

medical officials and nurses, shall be fixed by the Public Health Council, and their appointments be subject to the regulations of the State Civil Service Commission.

The work of all health centers, hospitals, clinics, district laboratories, etc., connected therewith shall be inspected and standardized by the State Department of Health, and the State grants shall be paid only on the written approval of the State Commissioner of Health.

Provision shall be made for occasional or periodic consultations or clinics at the health centers by specialists in medicine and surgery, to be furnished through the State Department of Health, and wide previous public announcement of these clinics and consultations shall be made. At these consultations and clinics, health officers and physicians may bring their patients for assistance in diagnosis and for advice as to treatment. Fees received from these consultations for the State service shall be credited to the hospital or center where the service is rendered.

The health center laboratories shall be under the supervision of the Director of the State Health Department Laboratories, in order that their work may be maintained at a high level of efficiency; and the facilities of the State Laboratory service shall be available to supplement those of the laboratories of the health centers.

The salaries of the medical and surgical staff, the fees for medical and surgical care, and the conditions for free service in the hospitals and clinics shall be determined by the Boards of Managers. The method of appointment and the composition of such Boards of Managers of the health centers and hospitals to be provided for in this bill.

Medical Society of the State of New York

County Societies

COUNTY OF ROCKLAND MEDICAL SOCIETY.

QUARTERLY MEETING, SPRING VALLEY, N. Y.

THURSDAY, APRIL 8, 1920.

The meeting was called to order at the City Club, with 18 members, 2 honorary members and 4 visitors present.

The minutes of the previous meeting were read and approved as read.

Dr. Miltimore submitted resolutions of condolence on the death of our former President, Dr. Giacomo A. Senigaglia. Moved, seconded and carried that the resolutions be adopted.

A letter from the State Treasurer was read regarding an assessment of \$2.00 per member levied by the House of Delegates.

A letter of resignation from Dr. Samuel Hollander, was read and upon motion duly seconded the Society voted to accept the resignation.

The application of Royal F. Sengstacken, for membership, was referred to the Board of Censors, for consideration.

After the business session a paper entitled "The Pathology and Treatment of Influenza-Pneumonia" (illustrated by lantern slides), was read by Orrin S. Wightman, M.D., New York City.

Discussion on this paper was opened by Dr. Clock, followed by Drs. Miltimore, Toms, Dougherty, Leitner, Giles, R. F. Sengstacken and Dingman.

A rising vote of thanks was extended to Dr. Wightman for his masterly and interesting paper.

The Society then adjourned to the residence of the President, where a delicious collation was served.

WAYNE COUNTY MEDICAL SOCIETY.

REGULAR MEETING, NEWARK, N. Y.,

Tuesday, April 13, 1920.

In the absence of the President, Dr. Ernest H. Wiedrich was elected Chairman.

The meeting was called to order at 11.45 A. M., with fifteen members and six visitors present.

The minutes of the preceding meeting were read and approved.

Dr. Charles H. Bennett, delegate to the State Society, submitted a report of the meeting of the House of Delegates, held in New York, March 22d-23d.

The report was ordered accepted and placed on file.

A communication from the State Treasurer regarding the extra tax of \$2, as adopted by the House of Delegates, was read and ordered placed on file.

A resolution was adopted remitting the county dues and paying the State dues and tax of Dr. A. A. Young.

Dr. John C. Cramer reported the Wayne County Physicians' Protective Association in a flourishing condition.

A luncheon was served at 12.45, after which the Society reconvened at two o'clock for the scientific session.

A very interesting case of severe burn of the leg, resulting in extensive cicatrices, which limited the movement of the knee. Relieved by the removal of scar tissue and the resort to skin grafting, by John F. Myers, M.D., Sodus.

"Pathology and Treatment of Diabetes Mellitus," illustrated by lantern slides, by Samuel T. Nicholson, Jr., M.D., Clifton Springs (by invitation).

Exhibition of a series of thirty-five Roentgen Views of Interesting Chest Conditions, by C. Harvey Jewett, M.D., Clifton Springs.

History of Two Cases of Gangrenous Inflammation of the Gall-Bladder, by Myron E. Carmer, M.D., Lyons.

Résumé of the proposed Sage Bill, by C. R. Hervey, M.D.

Discussion followed by all the members present.

MEDICAL SOCIETY OF THE COUNTY OF MONTGOMERY.

REGULAR MEETING, AMSTERDAM, N. Y.,

Thursday, April 8, 1920.

The meeting was called to order at 8.15 P. M., in the Y. M. C. A. Building, by the President, Dr. Eugene W. Kilts.

The minutes of the previous meeting were read and approved as read.

A communication from Essex County was read, transferring Dr. Houghton from the Essex County Medical Society to the County of Montgomery.

On motion of Dr. Timmerman, the matter was referred to the Censors. Seconded by Dr. Canna and carried.

After the business session a special exhibit of Diagnostic Films on Pulmonary Tuberculosis was given, through the State Department of Health, by courtesy of the United States Public Health Service.

Moved, seconded and carried, that the next meeting be held in Canajoharie in June, with a dinner at the new hotel.

DUTCHESS-PUTNAM MEDICAL SOCIETY.

REGULAR MEETING, POUGHKEEPSIE, N. Y.

WEDNESDAY, APRIL 14, 1920.

The meeting was called to order in the Library Rooms, by the President, Dr. Irving D. LeRoy, at 4:00 P. M. Twenty-eight members were present.

The minutes of the previous meeting were read and accepted as read.

The following new members were elected: Drs. John I. Becker, Howard M. Kenyon, L. M. Green, H. L. Cookingham.

RESOLVED, "That the Dutchess-Putnam Medical Society go on record as favoring Senate Bill No. 1533, dealing with the establishment of health centers, and that the Secretary be authorized to notify members of the Legislature of this action." Seconded and carried.

Resolution was conveyed to Dr. James E. Sadlier extending the best wishes of the Dutchess-Putnam Medical Society for his rapid recovery.

RESOLVED, That an invitation be extended to the First District Branch to hold its next annual meeting in Poughkeepsie.

The By-Laws were amended to read as follows: "Each member shall pay annually the sum of (\$3.00) which shall be due on the first day of January." The matter in brackets is new.

Following the business session the following papers were presented:

Ectopic Gestation, James T. Harrington, M.D., Poughkeepsie.

Treatment in General Paresis, Howard P. Carpenter, M.D., Poughkeepsie.

A luncheon was served at 6:00 P. M.

THE MEDICAL SOCIETY OF THE COUNTY OF ONEIDA.

REGULAR MEETING, UTICA, N. Y.

TUESDAY, APRIL 13, 1920.

The meeting was called to order in St. Luke's Hospital.

The subject of fees was taken up, and resolutions were unanimously adopted whereby the fees of the general practitioner were advanced practically 50 per cent.

The scientific session consisted of the following interesting papers:

Abdominal Surgery, Fred W. Smith, M.D., Utica.

The Treatment of Congenital Malformations, Charles H. Baldwin, M.D., Utica.

Report of a Case of Appendicitis in an Infant, with Radiographic Views, F. M. Miller, M.D., Utica.

THE MEDICAL SOCIETY OF THE COUNTY OF GENESEE.

REGULAR MEETING, BATAVIA, N. Y.

THURSDAY, APRIL 8, 1920.

The meeting was called to order at 4:30 P. M. at the Elk's Club.

Drs. C. L. Davis and Loren B. Manchester of Batavia were elected to membership.

It was decided to hold the meetings every two months during the summer and to omit the winter meeting.

After the business session the following interesting papers were read:

Surgical Treatment of Pernicious Vomiting—William D. Johnson, M.D., Batavia. Discussion by Drs. G. A. Neal and H. M. Spofford.

Scarlet Fever—Jesse N. Roe, M.D., Buffalo. Discussion by Drs. W. D. Johnson, H. M. Spofford, J. W. Le Seur, Van S. Laughlin, and E. J. Phillips.

A supper was then served, and the meeting adjourned.

THE MEDICAL SOCIETY OF THE COUNTY OF ORANGE.

REGULAR MEETING, MIDDLETOWN, N. Y.

WEDNESDAY, APRIL 21, 1920.

The meeting was called to order in the City Hall at 2 P. M.

The following members were elected to membership: Drs. Willis I. Purdy, Middletown; Osmond I. Van Keuren, Monroe; and L. J. Kiernan, Campbell Hall.

Resolutions on the death of Dr. Robert Kearns were presented by Dr. T. D. Mills and Dr. A. B. Chappell.

Blood Chemistry in Relation to Diagnosis and Treatment, Charles J. Hunt, M.D., Post Graduate Hospital, New York City. Discussion opened by E. C. Rushmore, M.D.

Prevalence of Venereal Disease in Rural Districts, and proposed Methods of Control, William B. Aten, M.D., Warwick. Discussion opened by W. H. Snyder, M.D.

SUFFOLK COUNTY MEDICAL SOCIETY.

SEMI-ANNUAL MEETING, PORT JEFFERSON, N. Y.

THURSDAY, APRIL 29, 1920.

The business meeting was called to order in the St. Charles' Hospital, at 11:00 A. M.

After a luncheon served at the Hospital, the meeting adjourned for the scientific session, which consisted of clinics on:

Mental Defectives of the Moron Group.

Orthopedic Cases of Practical Interest.

Frank S. Child, M.D., and Clyde L. McNeil.

Book Reviews

A MANUAL OF OBSTETRICS. By JOHN COOKE HIRST, M.D., Associate in Gynecology, University of Pennsylvania; Obstetrician and Gynecologist Philadelphia General Hospital. 12mo of 516 pages with 216 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$3.00 net.

This book is, as the author claims, an excellent "companion to the author's 'Manual of Gynecology,'" and yet there are a number of things in Chap. XIV that might well have been omitted from an Obstetrics. The general arrangement follows most text-books, and for reference does fairly well, though there are some errors in the indexing.

Like most text-books, it fails to give a clinical picture or discuss pathology and treatment of the most commonly disastrous dystocia—the long drawn out first stage with little or no liquor amnii, a posterior position, and a retraction ring. Failing to link it up with the above, anæsthesia is discussed academically, but not thoughtfully, from the point of view of the individual patient's problem.

The distinction of an adherent placenta from an undetached placenta is not made clearly, and the treatment of the former most rare condition is incomplete. Cesarean section for impacted shoulder presentation with a prolapsed arm is hardly tenable by most obstetricians, and another surprise in a modern text-book is the packing of a uterus in therapeutic abortion. A good deal of space is given to the many methods of dilatation of the cervix, and too little to the really surgical method—vaginal hysterotomy.

The book, like its companion, is primarily for medical students, and while it unfortunately follows most of the old traditions, it will be of great help to the student in his necessary quest for his degree and license.

E. B.

AMERICAN ILLUSTRATED MEDICAL DICTIONARY (DORLAND). A new and complete Dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Tenth Edition, Revised and Enlarged. Edited by W. A. NEWMAN DORLAND, M.D. Octavo, 1201 pages, 331 illustrations, 119 in colors. Containing over 2,000 new terms. Philadelphia and London: W. B. Saunders Company, 1919. Flexible leather, \$5.50 net; thumb index, \$6.00 net.

"Dorland's Dictionary" needs no introduction to the Medical Profession. It has held an enviable place among the working tools of the medical student and the practitioner during the past nineteen years.

This tenth addition has been thoroughly revised and brought up to date by the addition of several hundred new words, including many of the terms coined during the late war.

Aside from its completeness and general excellence, other commendable features are the style of type used and the arrangement of the matter. A great deal of information has been crowded into this volume of 1,201 pages, which is not by any means unwieldy to handle.

In this revision "Dorland" continues to merit the well-deserved distinction it has held as a standard among medical dictionaries.

NERVOUS AND MENTAL DISEASES. By ARCHIBALD CHURCH, M.D., Professor Nervous and Mental Diseases Northwestern University Med. School, Chicago; and FREDERICK PETERSON, M.D., formerly Professor of Psychiatry, Columbia University. Ninth edition, revised. Octavo volume, 949 pages, 350 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$7.00 net.

The appearance of the ninth edition of this most excellent work is the best testimonial to its popularity. The reviewer considers it the best neurological text-book that has ever come to his notice. Reasonably conservative, very little space is given to the consideration of medical fads and fancies which have not as yet fully demonstrated their value. The book is written in a clear, concise style, in language that is easily understandable for the student as well as physician. The only chapters that have been rewritten in the present edition are those dealing with general paresis and traumatic insanity, although many minor changes have been made.

THE NOSE, PARANASAL SINUSES, NASOLACRIMAL PASSAGEWAYS, AND OLFACTORY ORGAN IN MAN. A Genetic, Developmental, and Anatomico-physiological Consideration. By J. PARSONS SCHAEFFER, A.M., M.D., Ph.D., Prof. Anatomy and Director Daniel Baugh Institute of Anatomy, Jefferson Medical College, Phila., formerly Asst. Prof. Anatomy, Cornell Medical College. Prof. Anatomy, Yale University Medical School. 370 pages, 204 illustrations, 18 printed in color. Philadelphia: P. Blakiston's Son & Co., 1920. \$4 to \$10.00.

This work is first and essentially an anatomic study of the nose by an anatomist with unusual facilities and material at hand, of which he has taken full advantage. As such it should be carefully read by every practitioner specializing in rhinology, for anatomy must of necessity be the "hobby" of every successful surgeon. The large series of fine plates is very helpful, as note the series of 6 figures representing the accessory maxillary ostium found by different investigators cited as once in 5; 4 in 9; 35 in 80 cases, and so on. The name crista lateralis is used to characterize the common septal deformity along the sphenoidal process of the septal cartilage. The author does not specifically mention that this excrescence is frequently composed of both cartilage and bone and that failure to remove both the ridge and the overlying cartilage results in partial or complete

failure to obtain the desired results in cases of obstruction. The reviewer does not agree with the author in recommending puncture of the maxillary antrum through the middle nasal fossa in young children. On the contrary the trochar placed snugly in the groove below the lower turbinate must be driven more upwardly in children to avoid injury to teeth, and somewhat outwardly to avoid the chance of entering the orbit as will inevitably frequently occur, the reviewer believes, in efforts to drain the antrum through the middle fossa.

Some of the dissections are very elaborate as for example that showing the lining membrane of the nose and accessory sinuses in toto, prepared by previously hardening the specimen in formalin after which the bone surrounding the membrane was removed.

The embryological development is of interest in showing how tremendous changes are effected in the process of prenatal growth, also how slight retardation of growth occasions the familiar deformities, cleft palate and the like. The development of the accessory sinuses is here worked out more elaborately than in any previous publication we know of.

W. C. B.

MODERN SURGERY: GENERAL AND OPERATIVE. By J. CHALMERS DAcOSTA, M.D., and SAMUEL D. GROSS, Prof. Surgery, Jefferson Medical College, Phila., Pa. Eighth Edition, Revised, Enlarged, Reset. Octavo 1,697 pages, 1,177 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$8.00 net.

The eighth edition of DaCosta's Modern Surgery has been enlarged to 1,700 pages. The text has been revised, brought up to date, and is elucidated by over 1,100 illustrations. The author has quoted freely from numerous surgical writers and this adds quality and color to the book.

"DaCosta" has always ranked high as a text-book for ready reference and this present volume surpasses any of the preceding editions.

H. R. TARBOX.

Deaths

WARREN L. AYER, M.D., Oswego, died March 1920.

BERNARD BARTOW, M.D., Buffalo, died March 29, 1920.

ARTHUR JUDSON BENEDICT, M.D., Newburgh, died April 17, 1920.

AUGUSTUS H. BROWN, M.D., Bayside, died April 1, 1920.

JOSEPH E. CLARK, M.D., Utica, died March 4, 1920.

EDWARD J. CONNELL, M.D., New York City, died April 11, 1920.

JOHN H. DANIELS, M.D., Buffalo, died February 13, 1920.

DANIEL F. EVERTS, M.D., Romulus, died April 11, 1920.

JOSEPH FRAENKEL, M.D., New York City, died April 24, 1920.

WILLIAM GAERTNER, M.D., Buffalo, died March 12, 1920.

JULIUS J. GOLDSTEIN, M.D., New York City, died April 14, 1920.

LOUIS NOTT LANEHART, M.D., Hempstead, died April 25, 1920.

JOHN A. LEE, M.D., Brooklyn, died April 4, 1920.

FREDERIC J. LEVESEUR, M.D., New York City, died March 19, 1920.

JAMES WRIGHT MARKOE, M.D., New York City, died April 18, 1920.

PETER L. SCHENCK, M.D., Brooklyn, died March 6, 1920.

CLARENCE R. SEELEY, M.D., Attica, died February 6, 1920.

STAFFORD BAKER SMITH, M.D., New York City, died February 29, 1920.

AUGUSTUS F. G. ZURHORST, M.D., Oakfield, died February 21, 1920.

NEW YORK STATE JOURNAL OF MEDICINE

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The Medical Society of the State of New York is not responsible for views or statements, outside of its own authoritative actions, Published in the Journal

Vol. XX.

JUNE, 1920

No. 6

EDITORIAL DEPARTMENT

THE STATE JOURNAL

IN this post-war period of reconstruction, the manifest general effort is to make things bigger and better; to substitute for the old order of things, the greater efficiency of the new, based on wider experience and broader conception.

The Medical Society of the State of New York consists of over nine thousand physicians of the Empire State, and this JOURNAL is their mouthpiece. The JOURNAL should be not only their organ for original communications read at their Annual Meeting and similar matters of scientific interest, but it should also be the medium for their public exchange of views concerning the economic problems of the commonwealth, in so far as these are of importance to the physician himself and particularly when they deal with the relationship between the profession and the public.

Your Publication Committee desires to enlarge the editorial portion of the JOURNAL for this purpose, to be able to present facts of general public interest, not with the idea of urging a particular policy in mooted questions, but rather that the profession may decide its policy on the basis of complete authentic evidence rather than on hearsay and often biased information. Accurate detailed accounts of proposed legislative and congressional action for the instruction of members

of the profession will be secured which can be used for constructive or correctional argument by the public spirited physician.

Recent years have witnessed rapidly increasing attention on the part of the public to the subject of social welfare and public health, and as these are so closely linked to the practice of medicine, it is the duty of every physician to be conversant with the details of these matters in order that he may be able to properly advise concerning them. Such study and attention by physicians as a whole will do much to prevent hasty and incomplete measures for public good, and any arrangement with the medical profession inimical to its standards and dignity.

It is also desired that members of the State Society shall write to the JOURNAL concerning subjects of general interest on which they have information of value to the profession, or if they desire such information. Such communications must carry the full signature as evidence of responsibility and good faith and will appear under the caption "Forum."

Resolutions adopted by County Societies of more than local interest, interim reports or opinions of State Society Committees, news items and all matters of general interest will appear also, to stimulate closer relationship and better understanding.

In other words, it is proposed to make your JOURNAL of broader value, of greater interest and of more benefit, but in order to succeed in this task, your attention, co-operation and good will are imperative, and this is asked of you individually and collectively.

DUTY TO THE PUBLIC.

THE physician is traditionally a retiring person, absorbed in his daily routine which occupies more time than that of any other vocation, and but little given to public movements, particularly if they are political in nature. He does little to keep in intimate contact with the affairs of the nation outside of what he reads in the newspapers, and less to influence these affairs for the benefit of the public, by virtue of insistence on the maintenance of existing standards of his profession as a whole. Osler, Jacobi, Senn, Murphy and others have, during their lives, repeatedly called attention to these facts, unfortunately without material result. Is not public health as important as agriculture or the post office, and would our Union be without a public health official in the Cabinet, if the physicians of this great commonwealth demanded it, as they should? There have been many efforts made in this direction and our individual aid has been sought every time. You know this is the case, and to what extent has this praiseworthy object had your support? Have you given it the time, the serious attention and the weight of your influence with men of affairs, similar to what you have done in any matter of vital personal concern? If not, then the difference measures the degree of lack of duty to self, profession and nation.

The activities of both labor and capital for the betterment of the workman's health and living conditions, the efforts of the philanthropist and of organizations seeking the same end, and the desires for similarly improved general conditions by officials in charge of public health work, all present civic problems in which the activities of the physician are paramount for success. In few instances only have the members of the medical profession been the actual instigators of such beneficent movements, not because they do not favor such improvement but because they do not give public affairs the time and attention they deserve.

As the result of unguided lay activity in this direction, a number of new laws have been proposed to the Legislature in recent years, the medical provisions of which have been grossly inequitable, and if enacted, would doubtless have jeopardized the standards of medical practice and lessened its desirability as a vocation. It is not the duty of the physician as such to decide if these measures are too paternalistic or if they create undesirable class distinction; this will be done by the citizens of the State. It is, however, absolutely essential for every physician to participate in these public affairs to prevent the proposal of any measure involving the activities of physicians which is incompatible with the highest standards and the loftiest ideals of the medical profession.

The lack of manifest interest of the profession during the constructive period of such proposed laws frequently leads to their introduction in the Legislature, and members of the profession are constantly appearing in opposition to one or other measure. Legislators are beginning to associate physicians and opposition to proposed legislation, with consequent lessening of their influence, and this effect is enhanced by societies of heterogeneous membership formed for the sole purpose of opposing laws or a class of laws. When the profession enters the arena with a constructive policy in public affairs, not only the legislators but the citizens of the State will respect their opinions and accept guidance with greater confidence than at present.

Publicity has been traditionally objected to by the profession because it has been used almost exclusively by those seeking personal exploitation. Constant publicity by the organized medical profession in constructive arguments for the betterment of public health in plain language will do more to eliminate quacks, cults and healers of all kinds than any law enacted for this purpose. Strict discipline by the organized profession to exclude those who do not merit licence, and an efficient organization to obtain the withdrawal of licence from those who are guilty of improper acts, will also do much to increase the confidence of the public.

The medical profession, by virtue of its calling, owes the public protection from fraud of a kind it alone is competent to judge, and it owes the public constructive suggestions for the improvement of public health and the advance of preventive medicine. It bears repetition, that when the members of the profession as a whole live up to their civic duty and proclaim these things to the masses by means of proper publicity, no legislature will enact laws or even consider them, if they contain provisions which will affect the standing or the dignity of these guardians of public health.

Original Articles.

THE RELATION OF HYPERTENSION AND HYPOTENSION OF THE MEMBRANA TYMPANI TO DEAFNESS AND TINNITUS.*

By HAROLD HAYS, M.D., F.A.C.S.,
NEW YORK CITY.

BY hypertension of the ear drum, one means that the drum membrane is more rigidly held in place than it should be. It is found in that class of cases which we ordinarily classify as catarrhal deafness—a term which today should be considered more or less obsolete. These cases should more properly be classified as cases of adhesive deafness. Here we find a drum tensely drawn, with the insertion of the malleus standing out prominently. The greater part of the drum is retracted and the light reflex is missing. Often calcareous places can be seen.

By hypotension of the drum, one means that the drum is more or less flaccid. A certain poutingness may be present, so marked that one wonders whether there is not something in the middle ear which presses it out. At other times, one views a drum which looks normal, but which on more exact investigation with the otoscope shows that its excursions are too great. This flaccidity may extend into Schrapnell's membrane.

In certain cases (and these are more frequent than one thinks) there is a combined condition of the drum-hypertension and hypotension. One here sees the deeply indented drum with practically no excursion in the region of the insertion of the malleus, and yet there are relaxed portions of the drum on either side. In these latter cases it is exceedingly difficult to get results and the prognosis should be well guarded until one is able to tell which is the predominating condition.

In papers dealing on this subject, a great deal of stress has been laid on the etiological nose and throat factors; and rightly so. I believe that the importance of these factors has been impressed upon you sufficiently to leave it aside at this time, except to impress upon you a few important observations. The removal of tonsils and adenoids, the correction of nasal deformities such as a deviated septum or hypertrophied turbinate, the clearing up of any catarrhal condition in the nasopharynx, are matters which the faithful ear surgeon attends to at once. But let us discuss in the order of their importance some factors which are not usually considered:

1. IMPROPER BLOWING OF THE NOSE. *Through a Patulous Tube.*—To my mind there is nothing which tends to create more trouble with the ears than the improper blowing of the nose, and this is particularly so if the habit is started in child-

hood in a case where the nose and throat are frequently infected from continued colds. One has only to think of the mechanics of the ear (and to realize how easy it is to disturb the delicate correlation of bones and muscles therein) to appreciate the fact that the harsh blowing of the nose through a wide-open tube will inevitably result in a misplacement of the drum, which will not allow the proper transmission of air waves. The end result is hypotension of the drum.

Through a Partially Stenosed Tube.—Again we must study the mechanics of the middle ear. What happens can be explained simply: When the nose is blown too forcibly, a certain amount of air gains entrance into the ear under considerable pressure. The tube closes. Whether the drum at first becomes distended or not depends on how much air escapes, how rapidly the contained air is absorbed, and with what amount of force it reaches the membrana tympani. There is another factor here which has to be seriously considered, and that is the amount of infection which reaches the middle ear; for on this depends whether we shall later on have to deal with a hypertensed or a hypotensed drum. One should be greatly surprised, in view of the fact that the nasopharynx is seldom free from harmful organisms, that acute infections of the ear do not take place more frequently in the cases that we are describing. The chief result seems to be the insidious occurrence of adhesive processes.

2. FREQUENT EARACHES IN CHILDREN.—It is most difficult to test the hearing acuity of a child and inspection of the ears in these cases may show nothing. By the time the doctor sees the child the earache has often subsided. However, if there are repeated complaints of pain in the ear, the cause should be sought for. At such times the hearing should be tested. One often has to distract the attention of the child and then, by roundabout means, determine what he is after. When the child's confidence has been obtained, there is nothing better than to play with him, and, by questions during the play, determine whether the hearing is deficient or not. It is surprising how much can be learned in this way. After spending half an hour trying the usual tests on a child without results, I have taken him into the laboratory and shown him the guinea pigs, when, in a few moments, I have gotten what I was after. Of course, in this early stage, one does not see evidences of any pathological change in the ear, but he can make up his mind that definite and harmful changes will take place unless the ears are given the minutest attention.

3. THE AFTER-TREATMENT OF DISCHARGING EARS.—I do not believe that many of us are careless in the treatment of the ears after the discharge has ceased when such a condition occurs in adults. But here, again, we are too prone to neglect the child. The suppurative ear in a

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

child is not cured until the hearing is properly restored, and the sooner the parents are impressed with this fact the better off the child will be. A suppurative process from an ear extending over days, into weeks or months, is bound to result in temporary loss of hearing, which will remain permanent unless something is done at the time. Very simple treatment may result in the restoration of hearing. It has been within my experience, in many cases, to fully restore the hearing after suppuration by proper Politzerization, when the child has been left in my care as long as I thought necessary. Children are more easily Politzerized than adults and naturally respond more rapidly to such treatment. If proper treatment is not given them at this time, in many instances later on in life we shall see a hypertensed drum, which possibly may not respond to any treatment at all. In other words, the patient will have a dead ear.

4. ADHESIONS IN THE FOSSA OF ROSENMULLER.—The ordinary examination of the rhinopharynx with the mirror in many cases will not reveal the adhesions. A more careful examination has to be made with the author's pharyngoscope or the nasopharyngoscope of Holmes. One often sees fine bands in this fossa which extend from the recess of the fossa to the base of the promontory of the tube. One of two things happens: Either the tube is held too widely open, resulting eventually in a hypotension of the drum, or else the adhesions interfere with the proper action of the tubal muscles, resulting in a collapsed, closed tube and hypertension of the drum. In over fifty per cent of our cases we have discovered such adhesions, which we have readily broken down with the finger inserted deeply into the fossa. I know of a number of cases where this simple procedure has absolutely cured a distressing tinnitus which had lasted for a number of years. At all events, it is impossible to alleviate middle-ear symptoms when the tubal action is interfered with.

5. POLYPOID POSTERIOR TIPS OF THE INFERIOR TURBINATES.—When one considers the close proximity of the tubal orifice and the posterior tip of the inferior turbinate, it is surprising that the diseased condition of this tip is not more often thought of in connection with middle-ear conditions. Such tips can readily be seen with the pharyngoscope or nasopharyngoscope. They are often of sufficient size to block the tubal orifice completely. One case will suffice to illustrate this point.

Mrs. S. came to consult me about a distressing tinnitus. Examination of the right ear showed a hypotension of the drum of a mild type. The hearing was markedly diminished in both ears. At times the ear could be mildly Politzerized. This gave her marked relief temporarily. No sound or bougie could be passed into the Eustachian tube. Examination with the nasopharyngo-

scope showed polypoid ends of both inferior turbinates. The right one was large enough to swing into the tubal orifice, closing it off tightly. The patient characterized the condition by saying: "It feels to me as if a marble rolled around in the back of my throat and then fitted into something—like a ball and socket joint. When it gets into a certain position, my ear feels stuffy and the noise drives me crazy." I removed this polypoid tip, which measured two cm. long by three-quarters of a cm. wide. After a few treatments the tension of the drum was restored and her tinnitus disappeared.

6. DISEASED TEETH OR BURIED MOLARS.—One may properly ask how such factors are of importance in affecting the tension of the ear drums. They are etiological factors of as much importance as tonsils, adenoids, deflected septa, and so on, for they are a source of continuous irritation to the nasopharynx. Moreover, in hypersensitive subjects, they act as reflex irritants. We are all acquainted with the fact that carious teeth may cause pains in the ears. But we have not gone far enough to appreciate that the teeth may act on the ears in more than this indirect way. A recent instance will suffice: I had been treating a patient who was suffering from hypotension of the ear drum with a thickened Eustachian tube for a number of years. I had fed him on potassium iodide, although his Wassermann test was negative. I had straightened out his septum. I had dilated his Eustachian tube. I finally was satisfied to Politzerize his ear every week or so until his ear felt full again. Finally an X-ray picture of his jaw showed a buried wisdom tooth on the right side—the side on which he had his ear trouble. This was skillfully removed by a dental surgeon, with the result that his tinnitus has entirely disappeared and the fullness in his ear disappeared for months—until he developed an abscessed tooth on this same side. This tooth was extracted. Strange as it may seem, his ear drum has greatly changed in appearance. It has lost its thick, pinkish color and has become more or less translucent.

It is unnecessary to burden you with any dissertation on the symptoms resulting from hypertension or hypotension of the drum. The only ones that we are interested in and that are of any consequence are deafness and tinnitus. These two symptoms are so closely associated that it is seldom we hear complaints of a tinnitus without finding some deafness, the patient frequently being under the delusion that the reason he does not hear so well is because he has noises in the head. On the contrary, we often see cases of deafness due to one of these factors which is not associated with tinnitus. Why this relationship exists I do not think we are in a position to explain at the present time.

At this point one may ask: "Whenever a hypertension or a hypotension of the drum is dis-

covered, does it necessarily mean that the patient is deaf or is going to become deaf?" By no means. In the routine examination of the ears, it is surprising to see how often one encounters a relaxed or stiffened drum which ought to give symptoms. I have seen ear drums so bound down by adhesions that there was absolutely no movement of the ossicles, yet the test of the hearing has found it to be normal. Again, I have seen drums so relaxed that the slightest touch of the Politzer bag would allow of an inflation well beyond the normal. Yet in these cases the hearing tests show no impairment. How are we to explain such a state of affairs? Only on the basis that it makes absolutely no difference what the tension of an ear drum may be as long as sound waves are transmitted through the footplate of the stapes so that they are properly interpreted. Many of us have seen ears in which the drum has been entirely destroyed. A residual process has taken place with entire destruction of the malleus and incus, and yet the hearing has remained practically normal. Some of you may have other explanations than that above, but none can gainsay the fact that peculiar paradoxical conditions do exist, at times, which overturn all our preconceived notions of how things ought to be.

Diagnosis.

1. EXAMINATION OF THE EUSTACHIAN TUBES.

(a) *Tubal Orifice*.—It is now possible to determine accurately, by means of the nasopharyngoscope particularly, the exact condition of the tubal orifice. We shall not concern ourselves here with the extra-tubal conditions, such as adenoids, polypoid turbinates, and so on, but with the condition of the tubal orifice itself. In subacute conditions we frequently see the engorged tube which can readily be shrunk and proper instruments passed through it. But we are more concerned with the chronic pathological states which give rise to interference with intratympanic pressure and cause a hypertension or hypotension of the drum.

In a certain class of cases examination reveals a swollen, congested orifice. The lips of the tube stand widely open. The dimple is deep and takes a large bend to the catheter. Such a tube may be stenosed well within the opening and allow of the passage of the applicator only under considerable pressure. A second class of tubes present a slit-like appearance. The lips are drawn tightly together. Sometimes they separate easily; at other times they are tightly closed. I have seen every variation from the atrophic tube with glazed, glistening mucous membrane and a wide-open mouth, to the hypertrophied tube with a mouth so tightly sealed that under no circumstances can proper atmospheric pressure be maintained in the middle ear. Abnormalities have been so difficult to overcome in certain cases that it has been impossible to place

a catheter, for proper dilatation of the tube, without the aid of the nasopharyngoscope in the other nostril or the pharyngoscope in the mouth.

(b) *Conditions Within the Tube*.—One of two conditions is evident: Either the tube is widely open so that no difficulty is encountered in reaching the middle ear with the applicator or bougie, or else there is some stenosis of the tube usually encountered at the isthmus. The former class of cases is usually found associated with a hypotensed drum; the latter class of cases is usually found associated with the hypertensed drum, although there may be a mixture of the two.

A word of caution should be uttered here. Not all ears should be inflated by catheterization. Certain tubes cannot or should not be catheterized. If a tube is wide open and the drum massaged too forcibly, inevitably the drum is going to become relaxed, making the condition worse than it was before. The same holds true when an attempt is made to forcibly inflate an ear where the tube is partially stenosed. Either the drum is at once forced out of position by the inflation or else a residuum of air remains under pressure, which eventually brings about the same result. I have known many patients who, partially deaf, have consulted an ear specialist, only to have their ear drums forcibly inflated, with the result that they have become permanently worse. Changing a hypertensed drum to a hypotensed drum accomplishes nothing.

(c) *Diagnosing the Condition of the Eustachian Tube by Means of the Sounding Tube*.—Under no circumstances should an ear be inflated without the otologist connecting his ear with that of the patient so that he may be able to judge exactly what is taking place. This rule applies as well for Politzerization as for catheterization and is of particular importance if the tube has been previously dilated. It is surprising how much information can be gained in this way, not only of the excursions of the drum but also the condition of the tube itself.

1. *Excursions of the Drum*.—After proper dilatation of the Eustachian tube, one attaches the Politzer bag to the end of the catheter. A small volume of air is blown into the middle ear by the gentlest inflation, the pressure on the bag being gradually increased if necessary. There are three classes of cases that are met with (a) *a drum which allows of no vibration* even with the most forcible inflation with the tube wide open—the rigid drum or the extreme hypertensed drum; (b) *the hypertensed drum* of the ordinary type, usually called OMCC, where the vibratory excursions are fairly well outlined, the amount of excursion depending upon the force used. This is the kind of drum which can readily be forced into a state of hypotension if too much pressure is used. (c) *The hypotensed drum*—in these cases the least touch on the Politzer bag will send enough air into the middle ear to give

a sharp vibration to the drum. It is readily recognized by the sensation of a sharp click striking the examiner's ear. Overvibration of such a drum tends merely to make it looser. From the foregoing one can surmise that inflation of the middle-ear cavity is well-nigh useless in the first and third class of cases. In the second class, the cases with moderate hypertension and sometimes adhesions, proper inflation does a great deal of good. But one should judge the amount of inflation that should be used in any given case by the vibratory excursions of the drum and should never use a force which would be liable to cause a permanent harm. Such an assertion may sound bromidic, but I, as well as others, know of cases where proper intelligence has not been used.

2. *Variations in Tubal Patency.*—The Eustachian tube may be so wide open that any air reaching the middle ear during the normal acts of swallowing, yawning, etc., will have no effect on the ear drum. In fact, the atmospheric pressure within the middle ear would be ideal if it were not that the slightest undue pressure, such as occurs when blowing the nose or when the ear drum is massaged through the tube, tends to upset the natural balance of the drum. In most of these cases we find a relaxed drum, except in a certain class of cases in which there was at first a stenosis of the tube with a resultant hypertension of the drum which has extended to the stage of complete rigidity. In these cases, with the tube wide open, it is almost impossible to create an effect upon the drum, even with the most forcible massage. It is possible that the atrophic condition of the tube has extended to the mucosa of the middle ear and that complete ankylosis of the ossicles has taken place.

Before turning to the cases in which there is an almost completely stenosed tube, we must consider a number of conditions which occur in the partially closed tube. Most cases belong in this class. The differentiation of the conditions found will depend upon a close study of the tubal orifice, the ease or difficulty with which the tube can be dilated and the sensations which reach the examiner's ear when he massages the drum after dilatation of the tube. There are a number of sounds of importance which may roughly be classified into five groups.

The Eustachian orifice is first cocaineized with a 4 per cent solution of cocaine. After a few moments a Yankauer applicator, carefully wound with cotton, is passed into the tube through a wide catheter and is gently allowed to progress toward the ear until it reaches the isthmus of the tube. Here it is allowed to rest and then pressed through it until it reaches the ear. After removing the applicator a Yankauer sound or bougie, previously dipped into some mentholated oil, replaces it. This may be left *in situ* for one to two minutes to half an hour. On removing

the sound, the Politzer bag is attached to the catheter and a sounding tube connected with the patient's ear. One now notices the difference in the tubal patency and at the same time has a number of sensations transmitted to his ear which are of distinct value.

(a) On gentle inflation, one may hear a *crackling sound*, like the soft snapping of twigs. This sound is indicative of dry mucus in the tube or fine adhesions in the middle-ear cavity. If it is the former, very little improvement will be noticed in the hearing; if it is the latter, there will be quite a little improvement on inflation.

(b) A *gurgling sound* is often noticeable. This is due to an edematous condition of the tubal mucosa, resulting either from trauma to the mucosa from the insertion of the foreign body or from a chronic edema of the tube. If it is the former, the condition will improve; if it is the latter, the care of the edema becomes a most important matter, and it is impossible to prognosticate the outcome.

(c) A *whistling sound* reaching the examiner's ear should put him on his guard at once, for the probabilities are that he is dealing with a chronically stenosed tube which needs constant dilatation before any attempt is made at inflation. It is in cases like these, where the ear drum is hypertensed, that forcible inflation will result in permanent impairment of hearing by causing a hypotension of the drum. If air is forcibly injected through this narrowed tube, either overpressure is exerted at the time of the inflation or a positive pressure is maintained in the middle ear, because there is no way for this air to escape.

(d) *Sucking Sounds.*—If the above holds true for whistling sounds, it holds equally true for sucking sounds, for such sound usually occurs when the tube closes up completely immediately after the inflation. The drum is drawn in at the time of such suction, with the result that there is a loosening of the annular ligament.

(e) *Mucoid Sounds.*—It is impossible to classify these accurately. They are of great variety. It has been within the experience of many of us that when the ear is inflated, a bubbling, churning sensation reaches the ear, which is indicative of mucus in the Eustachian tube. Sometimes the mucus is in the catheter. If so the catheter can be withdrawn and cleaned. But if the mucus is in the tube, an attempt at inflation may readily result in the forcing of such mucus into the middle ear, with almost inevitable infection.

OTOSCOPIC DIAGNOSIS.—It is impossible to make a proper diagnosis with the ordinary aural speculum. One must use an electric otoscope to which can be attached a massage apparatus. The drum is first examined without the magnifying glass. This informs one of the things ordinarily looked for, such as possible retraction of the drum, adhesions, calcified areas, etc. But it is

seldom that such examination proves whether the drum is in a state of hyper or hypotension. The magnifying glass is now put on the otoscope and an interrupted suction apparatus attached. There should be an opening in the tubing from the suction pump at some point so that the finger can be used to vary the amount of suction used. The speculum should be of sufficient size to fit the external canal neatly. When the suction is employed, one notices one of three conditions:

(a) *Hypertensed Drum.*—The vibrations which reach the drum have very little, if any, effect upon it. The waves of air strike the drum, but one sees very little movement. There may be a slight wave in Schrapnell's membrane or on either side of the insertion of the malleus, but one can see that there is no movement of the ossicles. The degrees of hypertension may vary from the almost normal to a drum which is absolutely rigid.

(b) *Hypertensed Drum.*—As soon as the vibration is started, one can see an oscillating movement of the drum backward and forward—the drum pouts. Even though there may be slight retraction in the region of the handle of the malleus, there is an exaggeration of the light reflex. The laxity of the drum may even be ascertained when a very small speculum is used which does not hug the wall of the canal closely. In no other way can a relaxed drum be so clearly diagnosed.

(c) *Combined Hypertensed and Hypotensed Drum.*—A combination of the two conditions occurs very frequently. Certain parts of the drum are rigid, other parts are flaccid. The rigidity occurs most frequently in the region of the insertion of the malleus and that part of the drum called the annular ligament. The relaxed portion occupies either the anterior or posterior quadrant or both. There may also be a relaxation of Schrapnell's membrane.

TREATMENT.—It is impossible in the short time at my disposal to go into details of treatment. Briefly, it may be outlined as follows:

1. *Preventive Treatment.*—This includes the proper hygiene of the nose and throat—the removal of tonsils and adenoids, hypertrophied turbinates, particularly the posterior tips of the inferior turbinates, the correction of septal deformities, the proper draining of diseased sinuses, the care of the teeth, the freeing of adhesions in the fossæ of Rosenmüller, etc. It includes, moreover, the proper care of acute ear conditions in children, particularly the attention to hearing after the acute symptoms have subsided. Lastly, it includes the teaching of the proper blowing of the nose.

2. *Treatment of the Ears in Cases with Hypertension.*—I am of the firm belief that the ordinary catheterization of Politzerization of the middle ear gives little permanent relief except in

subacute cases. Invariably, where the disease has been of long standing, there is a diseased condition of the Eustachian tube which must be overcome. This is best accomplished by dilatation with the Yankauer applicators, sounds and bougies. The mucosa of the tube should first be shrunk with a cocain-adrenalin solution on the applicator, and then the sounds should be passed and allowed to remain in place for from five minutes to half an hour. The majority of men do not leave these dilators in place long enough. Putting them in and taking them right out again does little permanent good.

After the dilators are removed, the gentlest inflation should be tried until one is absolutely sure of the impression he is making on the drum. If there is distinct vibration with very little pressure on the Politzer bag, very little pressure should be used. I have had cases where the slightest touch on the bag has shown a vibration. In such cases, it is better not to use any massage but to allow nature to do the massage with each act of swallowing during the next twenty-four hours. Other cases are seen (where the drum is almost rigid) in which it will do no harm to use a forced massage, but only with the sounding tube in the examiner's ear so that he may be sure of every change that is taking place.

3. *Treatment of the Ears where Hypotension is Present.*—In these cases more harm than good is done by massage by catheterization. Mild Politzerization performed very gently when the tubes are fairly well opened may give some temporary relief, but the most important treatment consists in tightening the drum. In former papers, I have spoken of some experimental work in this direction and also of the remarkable results obtained by making direct applications of cantharides collodion to the drum after the method of Heath of London. I do not desire to enter into a discussion of this method here (I realize that it has been greatly discredited), but merely to mention that after employing it in many cases, I have yet to see the first untoward result, and can definitely affirm that in a small percentage of cases its employment has resulted in permanent good. During this past winter I have seen a patient on whom I tried this treatment for marked deafness and tinnitus six years ago. She has never had a return of her tinnitus. Her hearing, which had improved greatly at the time, has become slightly diminished again, but even today is better than when I first saw her. Great care must be used in this form of treatment. I feel assured that it should be more universally used in selected cases.

(c) *Cases with Hypertension and Hypotension.*—There is no definite line of treatment that I can outline in these cases. Each patient must be treated differently, and often one has to experiment for weeks until he finds the one treatment to which the patient will best respond.

In conclusion, let me say that it is most unfortunate that we find it impossible to analyze and study our clinic cases closely enough to give the poor the relief that they deserve. It is about time that clinics for the treatment of deafness and deafness only were established, so that men who were particularly interested in this line of work would have the opportunity and incentive to work out problems along scientific lines. It is no longer right to treat deafness and tinnitus empirically. Each case must be carefully studied and given the benefit of personal thought. Such thought cannot be given the deafened who visit the ordinary ear clinic. There is too much there that is more interesting. Moreover, no one has the time to give these patients the attention that they deserve. If you have a deaf member in your family or are deaf yourself, you will see the sense of these remarks. No one deserves more consideration and receives less than the individual who is constantly complaining that he has a noise in his ear or that he is becoming so hard of hearing that he is unable to continue the battle of life without a handicap from which there ought to be some method of relief.

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THE TREATMENT OF MUSCULAR ANOMALIES.*

By EDGAR S. THOMSON, M.D.,
NEW YORK CITY.

THE question of the treatment of disorders of the extraocular muscles is one which is necessarily dependent on somewhat varying views covering their physiology, and pathology, if it may be so expressed. I have nothing new to offer on these difficult and intricate questions, but shall approach this subject entirely from the practical standpoint, colored naturally by my own experiences. It is perfectly well known that muscular tests may run into almost an indefinite amount of time and many devious paths of investigation. The question of practical importance then is: What is the best method of approaching the question of the extraocular muscles in our daily office routine so as to arrive most

speedily at the desired end, the relief of muscle fatigue and the increase of ocular efficiency?

First, the refraction, manifest, and frequently the total under a cycloplegic, should be determined, and glasses prescribed. Ocular co-ordination is a complicated process and it will not be questioned, I think, that an irritable ciliary muscle will at the very least cloud an intelligent judgment of the amount of trouble the external muscles are producing. We can judge the efficiency of the ocular muscles only by their ability to perform satisfactorily the day's work, and efforts at mechanical measurements, certainly a valuable line of investigation, have so far led to little practical result. It follows, therefore, that the element of confusion in the action of the ciliary body must if possible be eliminated. Also the relaxation of accommodation in certain cases unquestionably alters the external muscular measurements. This is true in many cases of esophoria and to a lesser degree in exophoria. Vertical deviations are very little influenced by accommodative change. There is unquestionably a certain variation in the amount of hyperphoria from time to time, but that this can be influenced in any marked degree has not been my observation. The influence, if there is any, is very indirect. I am aware that in some quarters the opposite opinion is held and that the occurrence of hyperphoria has been attributed to differences of refraction between the two eyes. I can only say that while correction of the refractive error in many cases may render a low degree of hyperphoria negligible from a practical standpoint, careful testing in my experience has shown that the hyperphoria still persisted, usually in its original figures.

Passing next to the measurement of the ocular balance, which should be noted before the prescription of the glasses but more carefully studied later, the amount of deviation at twenty feet is noted with the phorometer and Maddox rod and candle, and the amount of deviation at fourteen inches with the four mm. black spot and a vertical prism in the ordinary reading position. Fusion tests at twenty feet are next tried, and the ability to fuse candle images with a prism held base out is recorded (adduction normal, 40° or more); the ability to overcome prisms held base in (abduction 6° to 8°) and the ability to fuse images with a prism held base down over either eye (sursumduction, about 2°). Finally, the rotations of each eye are taken with a perimeter and candle in the usual manner in order to discover a local difficulty, (rotations should be about 50° internal and external, and 50° down and 40° up.) In paralytic cases the field of binocular fixation should be taken with perimeter and candle or with black screen and pins at one meter distance.

One of the most important muscular questions is concomitant convergent strabismus. This

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develops usually between the ages of two and five—sometimes younger but rarely older, and is manifested by slight periods of turning inward of one eye, often each eye alternately, until some general condition occurs, as digestive disturbance, infectious disease, etc., when the eye turns decidedly inward and remains so, when the squint passes into what may be called the fixed condition. Binocular vision is then lost and the squinting eye gradually becomes amblyopic. Accommodative strain from hypermetropia undoubtedly plays an important part, but why the condition should occur as it does leaving a permanently spasmodic muscle which does not often relax spontaneously, is still unexplained. Unquestionably the cause is to be found in the stage of local development at which the child has arrived, but when we have said this we have not approached the solution by very many degrees. Certain clinical facts stand out, and are for the most part well conceded. The earlier such cases are treated the better the results will be and the larger proportion of cases will be relieved without operative interference. Amblyopia does not occur if the squint can be relieved and binocular vision maintained. If binocular vision has been lost and a moderate amount of amblyopia exists, not lower than 20/200, the straightening of the eye, by whatever means, and careful training of the binocular vision will in a large proportion of cases improve the vision in the amblyopic eye, perhaps bringing it close to normal, if the patient be under ten years of age. Beyond this age the improvement of the amblyopia becomes steadily more difficult, although binocular vision may be secured.

What then in brief are the best methods to be pursued? First, the occlusive pad. In many cases if when the child begins to squint a black patch be tied over the fixing eye for an hour or two a day the squint will subside without further treatment. If the squint alternates between the two eyes the pad should be shifted, being used for that day on the eye which happens to be fixing.

Next the accommodation should be paralyzed with atropine for periods of a week at a time. If the squint has reached the "fixed" stage atropine should be used and continued as good results are obtained. It is possible by keeping the child under atropine for periods of several weeks to relieve a squint which at first seemed intractable. Atropine in the *fixing* eye only is at times useful and may be continued as results are secured. If hypermetropia exists glasses should be prescribed. It seems hardly necessary to do more than mention this question as it is so well understood. The correction should be as near the total as it is possible to get without blurring the vision, and should be worn as constantly as possible. Many very young children can be made

to wear a glass for at least a few hours a day and a certain amount of relaxation secured.

Binocular exercises with the stereoscope have a certain value before the squint becomes fixed. Even young children will at times use the simple pictures of the Kroll charts and secure good results. The great difficulty in this form of treatment is that to be effective it should be continued for long periods, weeks at a time, and children get very tired of it and are with difficulty kept at it.

If the squint has passed into the "fixed" stage, especially if it is of high degree, operation should be done if other methods have failed. The choice of operation is a question that has been much debated. Simple tenotomy of an internus undoubtedly leads to impairment of rotary power in the muscles and more likelihood of secondary divergence later, while advancement of one or both externi without tenotomy of the interni can hardly produce an over-effect but is certainly a much more formidable and dangerous operation. With the best of care infection along the lines of the scleral sutures may occur in an advancement and while this need not occur frequently, it must be thought of and the susceptibility of the child to conjunctival infection taken into consideration. My own preference is then for tenotomy in slight cases and advancement of the externi, without tenotomy of interni, in more marked cases. I use the Landolt method as modified by Wootton and try to get fully 15° to 20° over-effect.

After a successful operation—that, is when the deviation is for the most part obliterated—binocular vision is usually restored and further treatment aims at improving the amblyopia, should any exist. Stereoscopic exercises, first with dissimilar and then with similar pictures (Kroll or Wells charts) and also reading exercises with the amblyopic eye alone should be used. For this latter form of training a patch is placed over the normal eye, and the child is required to read aloud a large type for a certain period each day. As reading becomes more easy, the size of the type is decreased.

Before leaving this part of the subject it seems well to emphasize the fact that concomitant strabismus is not a condition extending over a period of a few weeks or a few months, but, except in a few mild cases, is an ever-present menace to the visual functions up to adolescence. Cases should not be treated over a limited period and then dropped, but should receive intelligent and careful supervision all through the "growing period" if the best results are to be obtained.

Divergent strabismus begins in childhood as a periodic deviation, which tends to increase until a continual divergence is established. Binocular vision then becomes impossible, but amblyopia does not occur; or perhaps it would be better to say that a definite divergence usually occurs too

late for the development of an amblyopia. It is certainly very unusual to see a fixed divergence under ten or twelve years of age. From whatever cause the condition begins, it ends with marked insufficiency of the interni, especially the one in the non-fixing eye. Treatment is of little avail as far as remedying the primary condition is concerned, and such cases as a rule must sooner or later come to operation. Full correction of the refractive error should be prescribed and excessive use of the accommodation avoided. Such children should always be taught to read or work at a long range—twelve to fourteen inches. Crookes lenses should be used if, as not infrequently happens, full sunlight has a tendency to increase the divergence. Stereoscopic exercises have a limited value and are only useful in the slight cases. Such cases require almost invariably an advancement of one or both internal recti, and it is usually better to wait until adolescence before operating, as the after-results are apt to be more permanent and the surgical procedure can be more satisfactorily accomplished. In general it may be said that the operation should be performed when the divergence becomes well established or when the asthenopia is so severe as to preclude a reasonable use of the eye at the near point, and this will usually be somewhere between the ages of fourteen and eighteen. Tenotomy of an externus is scarcely to be considered in these cases, and advancement of an internus without tenotomy of the opposing externus should be done on the fixing eye, with a similar procedure upon the diverging eye, but with a more considerable shortening of the internus, best accomplished by cutting off three or four mm. of the tendon. About 10° to 15° of over-effect should be secured at the time of the operation, as the effect invariably diminishes later. If the divergence is of a very high degree it may be necessary to do a tenotomy of the opposing externus, in which case an over-effect of 5° is enough.

Esophoria, exophoria, and hyperphoria are probably congenital conditions, broadly speaking, and appear as active factors when the demands made upon the eyes in near work are such that a reaction follows. They are seldom of importance in young children, and their importance increases as the use of the eyes increases. Practically they seldom require treatment in children under fifteen years of age. The Maddox rod test shows that the image of one eye is not on the same line as its fellow. Binocular vision is not impaired. Asthenopia in greater or less degrees may be present and also certain symptoms of general nervous disturbance, or nerve reflexes of rather varied type—occipital headache, vertigo, nausea, or even epileptiform convulsions. It is rather a nice point to decide, in a given case, as to just how much of a factor the muscu-

lar error may be, and the treatment is a matter involving a great deal of judgment. Vertical error is much more irritating than lateral, and it is not unusual to find a patient with 5° or 6° of exophoria or esophoria who is apparently having no trouble from it. On the other hand, a hyperphoria of 1° or 2° is always to be looked upon with suspicion. It is much more apt to cause severe reactions, dizziness, nausea, or remote reflexes. However, there has undoubtedly been a too great tendency in the past to consider the mechanical error rather than the individual characteristics of the patient, and a word of caution may not be amiss. Severe reflexes certainly do occur but are not in my experience as common as we have been led to believe. When the refraction has been carefully studied and glasses prescribed, and the general fact of the health and habits of the patient understood, then we are ready to judge the effect that a measured amount of deviation may be producing.

Esophoria of less than 5° is seldom an important factor, but its importance increases steadily beyond that figure. As is well known, it is favorably affected by the full correction of hypermetropia through the relaxation of the accommodation and the convergence, and its presence is an indication for as full a correction as may be borne. Prisms, base out, may be prescribed if necessary in amount from 2° to 6° , depending on the total amount—usually less than half the total should be prescribed. If all these measures fail, tenotomy of an internus should be done; and my preference in such cases is for the graduated tenotomy of Stevens, really a myotomy.

Exophoria is more apt to produce symptoms than esophoria; in fact, 2° or 3° of exophoria may give trouble on account of its effect on convergence. Treatment is more especially indicated when the deviation increases at the near point. Correction of hypermetropia may give a limited amount of relief, but if myopia exists the condition is certainly not relieved by correction. Nor are prisms, base in, of much service in myopia, although if hyperopia exists prisms may be prescribed. If prisms be prescribed they can usually approach very nearly the full amount of the error—that is, if an exophoria of 6° exists, 4° or 5° may be worn. If prisms fail to relieve in the presence of hypermetropia, and in most cases in myopia, an advancement of an internal rectus should be done. This may be done on one or both eyes, depending on the amount of the error. The muscle selected, if only one be done, will depend on the amount of limitation as shown by perimetric measurements, the muscle which shows the most restricted movements being chosen first. It is at times wise to graduate the advancement by partially tying the sutures and measuring the effect. The knots are completed after the proper amount of over-effect is obtained. If tenotomy of an externus is not done—and it usually is not

in these cases—the over-effect should be from 2° to 4°, being greater as the amount of original deviation is greater.

Hyperphoria is more apt to give symptoms than either of the other forms of deviation. It calls for a muscular effort which is, as it were, outside the natural movements of the eyes, and muscular stiffness, dizziness and asthenopia are the rule rather than the exception. As low an amount as $\frac{1}{2}^\circ$ may give symptoms, and if the irritation has been long continued remote reflexes or even severe nerve reactions may occur. Hyperphoria is very little affected by glasses, and it is therefore best to at once prescribe a prism. This should be about one-half the amount of deviation in the lower degrees and one-third in the higher degrees. For example, a patient with 1° will usually require a $\frac{1}{2}^\circ$ prism, base down, combined in the correcting lens, while in a case with 9° or 10°, $1\frac{1}{2}^\circ$ base down may be combined in one glass with a like amount, base up, in the other—3° in all. There is no very precise rule for the amount to be prescribed. If a certain amount be well borne, a higher degree may be tried, but the only criterion is the after-effect of wearing the glass. If the conditions do not improve under prisms it is best to perform a graduated tenotomy of the superior rectus. The results in these cases are often very gratifying; severe reflexes disappear as if by magic and muscular stiffness and asthenopia diminish remarkably. An over-effect of $\frac{1}{2}^\circ$ to 1° should be secured. If the hyperphoria be of high degree, 10° or more, a graduated advancement of the opposing muscle may be done. It is always wise in high degrees to operate on several muscles, so as to distribute the effect, rather than to attempt to secure the entire effect on one muscle. In hyperphoria combined with esophoria it is often advisable to prescribe a prism "off axis" so as to secure both a vertical and horizontal effect, and for this I have found Ziegler's table of resultant prisms very convenient.* For example, a prism of 3°, base down, and out axis 20°, would give 1° vertical and $2\frac{5}{8}^\circ$ horizontal.

Frequently one meets with cases in which no deviation exists, and yet in which asthenopic symptoms are present associated with lowered adduction of 6° to 8°. There has been some discussion as to the cause of this condition, and it has been stated that it is only a co-ordinative difficulty and not a definite loss of muscular power and therefore, by implication, needs no attention. Probably the first part of this statement is true in a measure, although it is difficult to conceive of a co-ordinative difficulty which is not accompanied by a certain loss of muscular power. A great deal of stress is laid on the fact that after a few trials patients are apt to "get the hang" of fusing prisms and reach higher figures than they

were able to do at the first trial. However, such patients frequently, as has been said, have asthenopic symptoms and show marked evidence of stiffness of muscular rotation, such as the inability to look at rapidly moving objects without distress, all of which are often much improved or even entirely relieved by fusion exercises. These are best done by using a candle at 20 feet and placing a weak pair of prisms over the regular distance correction. If the images remain double and do not fuse the candle is carried rapidly up toward the patient until the images fuse. After a few such attempts there is no difficulty with fusion, and it should be done fifteen or twenty times at each sitting. The exercises are done every day, preferably in the morning, and are continued for ten days, when the strength of the prisms is increased. Another period of ten days is followed by a further increase until the normal fusion power is reached. The exercises should be continued over a period of at least six weeks. It stands to reason that an increase of muscular power is markedly influenced by depressive conditions of the general health, and such conditions should receive careful attention.

At times in the presence of digestive or metabolic disturbances fusion exercises are followed by dizziness and pain, and under such conditions cannot be continued until the general condition improves. Hot water applications aid elimination in such cases and are often of great benefit.

In cases where the prism adduction cannot be raised, prisms up to 5° or 6° may be given for reading. This is, however, only a compromise, and is in my experience not productive of very happy results. Under the use of such prisms, which must be looked upon as "crutches," the muscular power does not increase and at times diminishes.

Fusion exercises are also of value in improving muscular power after operative treatment and are carried on under the same general principles.

WHAT SHOULD BE OUR ROUTINE IN EXAMINING CASES OF SQUINT?*

By ALEXANDER DUANE, M.D.,
NEW YORK CITY.

IT would seem as if a subject, like the one I have chosen—the routine examination to be pursued in cases of squint—had already been so thoroughly considered that nothing was left to be said. There is, in fact, very little that has not been already amply presented in detail by different careful observers. Nevertheless, observation has convinced me that examinations are often made somewhat perfunctorily and without due consideration of all the elements involved, and that consequently the best results that treatment might secure are not obtained. I may be

* Ziegler: A Convenient Prism Scale. *Am. of Oph.*, II, 3, July, 1893.

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pardoned, then, for recapitulating the methods that I have found serviceable in these cases, without, of course, laying any particular claim to originality in any of them.

The questions that we should ask ourselves in determining the scheme of examination that we ought to adopt are:

1. What are the basic etiologic types of strabismus?
2. What is the effect of refractive errors in inducing and maintaining strabismus?
3. What part in the causation of strabismus is played by deficiencies of the fusion sense and by anomalies like anisometropia and unilateral amblyopia that render fusion of little service?
4. What modifications in our scheme of examination may be suggested by the results of treatment?
5. What light can the history of a case throw on the etiology and character of a strabismus?

ETIOLOGICAL TYPES OF SQUINT.

The first point, then, to which I should like to call attention is that there are three types of squint which, as they require essentially different treatment, should be carefully differentiated at the outset. These types are:

1. The congenital form, primarily muscular and peripheral in origin.
2. The later acquired form, due to a convergence or divergence anomaly.
3. The mixed form, in which to a congenital muscular deficiency there is later superadded an anomaly of convergence or divergence.

The first type comprises deviations, often vertical, sometimes lateral, ranging themselves in special types and often accompanied by characteristic signs, such as head-tilting, which have been noticed since birth.

The second type comprises lateral deviations, the primary and basic feature of which is an anomaly of convergence or divergence. It includes either a convergent squint, for the most part associated with uncorrected hyperopia or some other cause producing accommodative strain; and divergent squint, sometimes associated with conditions causing undue relaxation of accommodation (uncorrected myopia), at other times apparently having no relation to refractive errors. It includes three types or rather stages:

(a) A pure anomaly of convergence or divergence (convergence excess or insufficiency, divergence excess or insufficiency). Such deviations are always periodic, often intermittent.

(b) An anomaly of convergence associated with a consecutive anomaly of divergence, or vice versa. Such deviations are usually constant and, as they develop, tend more and more to become non-periodic or continuous.

(c) Cases of Class (b) which have progressed to the point at which consecutive muscular changes, due to continuous overaction of one set of muscles and continuous underaction and stretching of the opponents, have set in. In these cases the deviation is constant and non-periodic. The range of excursion of the affected eye is displaced inward or outward, so that what we may call the point of equilibrium of the movement is decidedly to the outside or inside of the primary position.

RÔLE OF REFRACTION ANOMALIES AND DEFECTS OF FUSION SENSE IN CAUSING SQUINT.

With regard to the second and third points, viz., the effect of refractive anomalies, deficiencies in the fusion sense, and conditions like amblyopia and anisometropia interfering with binocular vision, little need be said. These are matters which have been thoroughly discussed from many viewpoints, and, while we do not all agree as to the relative bearing and importance of the factors mentioned in producing squint, we should all agree that no examination is complete unless we have determined all that we can concerning them. Therefore, thorough and careful investigation of the refraction, the fusion sense, and other possible contributing factors should always be undertaken. I would add that the accommodation should always be thoroughly tested, too. The younger the patient, the more important all this is.

To the statement just made we might simply add that there are three classes of cases in which we can say offhand that correction of the refractive error is not going to be of assistance. These are the purely congenital cases; the cases of divergent squint associated with hyperopia, and squint of any type associated with but slight uncorrected refractive error and with no notable deficiency of accommodation. Yet even here is one exception. Some cases of convergence excess which, contrary to the rule, persist in spite of full correction of the refractive error, and in which, moreover, the accommodation seems normal, require, on Theobald's plan, an experimentally determined convex addition for near work, i. e., require a refractive correction that at first we should think would not be needed at all.

Again, cases of the mixed type (combined congenital and acquired deviation) cannot be relieved by refractive correction alone, and the like is generally true of all squints associated with a marked vertical deviation or with parietic conditions of the muscles, and also is true of advanced cases of Type 2, in which definite muscular changes have occurred.

DIAGNOSIS AS AFFECTED BY SUCCESSIVE EXAMINATIONS.

I should like to lay some emphasis on the fourth point, viz., that the diagnosis in a case of squint will often depend on a comparison of

examinations made from time to time, showing the alterations produced in the deviation by time or treatment. Successive examinations, indeed, may not only give a clue to the prognosis and an indication for the treatment, but may also enable us with advantage to modify our method of examination.

Thus the reduction of a squint effected through atropinization or by persistent wearing of glasses shows what portion of the deviation is due to accommodative strain. Again, the gradual relief of an amblyopia by unilateral training may enable us for the first time to make satisfactory tests of fusion and binocular vision, and so pave the way to successful orthoptic treatment with the red glass, with the stereoscope, or the amblyoscope. In general, we may say that no case of squint can be regarded as properly examined unless the effects of properly applied treatment have been tested at sufficient intervals—unless, in other words, the examinations have been scattered over a number of months. The only exception is the congenital cases, in which a single examination may suffice to determine the diagnosis and decide the treatment.

LIGHT AFFORDED BY HISTORY OF CASE.

Before making the routine examinations we should ascertain the history of the case in a way calculated to bring out any points of differential value. Such are, particularly, the duration of the deviation or of symptoms that indicate a deviation. Such symptoms are a head-tilt or the fact that a child avoids looking in a given direction or persistently shuts one eye when trying to do this. Photographs, if suitably taken, are often illuminating as evidence. Information should be sought as to the apparent progress of the deviation—whether, for example, it has notably increased and under what conditions. The effects of glasses, or of intercurrent diseases, especially eye diseases, on the course of the deviation should also be ascertained. Further points are evidence as to the amount of vision present in each eye, the time when any interference with vision was first noted, etc.

PLAN OF EXAMINATION.

From these preliminary considerations the following may be deduced as a usually adequate routine of examination:

The history is first taken and all facts that may throw light on the time of development, the underlying cause, and the progress of the deviation elicited. As above stated, careful questioning may bring out some illuminating, perhaps decisive, points.

After doing this it is often best, especially in the case of young and fretful children and even of older persons when nervous, to take a look at them from a distance and when they are not aware of being observed. Useful information as

to the constancy of the squint, the question of whether it is alternating or not, the attitude of the head, and the movements of the eyes may thus be had, which cannot be obtained by a closer examination which makes the patient excited or self-conscious.

If the patient is old enough we then determine as accurately as possible the vision in each eye, get an approximate idea, at least, of the refraction and accommodation, and ascertain the condition of the fundus.

We then determine the deviation. If the patient is wearing glasses, or if our examination has given us some idea of the glasses he should wear, we make our muscle tests both with and without them.

The routine I pursue is then as follows:

1. I measure the deviation by the screen for distance and immediately after for near. In some cases, especially in suspected convergence or divergence paralysis, it is well to measure the deviation at several carefully measured distances, viz., at 5 or 6 metres, 1 metre, 0.5 metre and 0.25 metre.

The measurement is made by alternate covering, a prism being placed before one eye and increased in strength until the screen deviation is abolished and finally reversed. It is well when the measurement has been obtained with the prism before one eye to see if the correction is obtained with the same or a different prism placed before the other. In this way we determine in cases of actual muscular insufficiency the primary and secondary deviation.

2. I determine by repeated tests, first with the screen over one eye, then with both eyes uncovered (method of binocular uncovering), whether the deviation is a squint all the time or sometimes a heterophoria (intermittent squint) and whether it is uniocular or alternating, and if uniocular which eye deviates.

3. By repeating the test at near points, I determine whether the deviation is greater for distance than near, or vice versa, or whether it is a squint at one range and a heterophoria at another (periodic squint).

4. If the patient is intelligent enough, I get him, as I make the alternate cover test, to notice any parallax movement of the object, and in that case determine the strength of prism that abolishes this movement. If there is a wide discrepancy between the prism that corrects the parallax movement and the prism that corrects the screen deviation, there is evidently a false projection to an amount represented by the difference.

I may say that I prefer to indicate the deviation in all cases in degrees of actual deviation not in centrad. It is to be added that the prisms supplied us by opticians are sometimes wrongly numbered—sometimes very much so—and that

it would be well for each oculist to verify his own set.

5. I then take the convergence near point, measuring it in the way I have elsewhere described from the intercentral base-line. This is particularly important in cases of divergent squint. In such cases it often happens that the patient simply makes an effort to converge, but does not actually succeed in securing binocular fixation anywhere. Nevertheless, it is important to determine the point, sometimes relatively near, to which the object can be brought before he ceases to attempt to converge on it with the squinting eye. The nearness of this relative convergence near point is an index of the often strong converging power that such patients possess.

In convergent squint I notice in taking the convergence near point whether the patient's eye does or does not turn sharply and spasmodically in as the object is brought very near. If it does the existence of a convergence spasm is predicted.

6. I determine the rotations of the eyes in the six cardinal directions of the gaze to ascertain whether any of the ocular muscles are deficient. In doing this I fix the patient's head and make him follow a well-defined moving object carried successively in the six cardinal directions, noting whether in anyone of these either eye lags behind or shoots beyond its fellow. (The overshoot is particularly noticeable in some cases of vertical deviations.) At the same time I observe whether the motion in any given direction is performed reluctantly or with difficulty, or whether it is associated with evidence of effort, such as jerky, nystagmoid movements. Tests in which unocular rotation is precisely measured with the tropometer or perimeter do not, in my belief, afford results as trustworthy or as informing as these apparently rougher tests made by comparing the movements of both eyes when acting together. In case of doubt, I repeat this binocular excursion test with a card so placed that I can determine the rotations first with the right eye fixing, then with the left, the other being screened from the object, but visible to me. It is convenient in this case to set down the result in tabular form.

Thus:

	R. Eye Fxing	L. Eye Fixing
Eu. & R.	R. up with difficulty; L. shoots high up.	L. normal. R. drops considerably.
Eu. & L.	Normal.	Normal.
Er.	L. tends to go higher in far Er.	Normal.
El.	Normal.	Normal.
Ed. & R.	Normal.	Normal.
Ed. & L.	Normal.	Normal.

A statement which would indicate plainly a paresis of the right superior rectus with secondary deviation of the left inferior oblique.

The results may be confirmed by ascertaining the screen deviation in each of the six cardinal directions.

7. The attempt is then made to discover the degree of binocular vision present. This is tested by

(a) Red glass before one eye with or without a green glass before the other. If diplopia can thus be induced, it is well to determine on the tangent curtain its amount in different directions of the gaze. If diplopia cannot be recognized otherwise, it can sometimes be elicited by the use of a prism together with the red glass and green glass. If elicited, the amount should be measured with prisms.

(b) The amblyoscope.

(c) Bar reading.

8. If the patient recognizes diplopia I determine also the prism divergence (ability to overcome prisms, base in, when looking at a distant object). This is important, especially in cases of divergent squint.

9. If there is evidence of paresis of one of the vertical muscles, I try to determine the presence or absence of torsion in the affected eye and its fellow with the Maddox rod.

10. In paretic cases I occasionally test the projection to ascertain if the patient undershoots or overshoots the mark he points at.

11. Finally, I look for associated defects (head-tilting, true nystagmus, nystagmoid movements, etc.) that are apparently related to the deviation, and also look for such points in the general aspect and the physical and mental condition of the patient as may have a bearing on the etiology, diagnosis, or treatment. This may, not infrequently, require reference to other specialists or consultation with the family physician.

It is understood that, particularly in the case of young and restless children, the order of examination, above outlined, is by no means invariably followed. Often we have to make the examination piecemeal and, of course, it is important in the case of a fretful child to seize our opportunity and get the most important information first. Of course, too, it may happen that some of the steps are superfluous because they have been taken before by a competent observer. Even so, however, it is well to repeat them, for none of us is infallible and the very best observers may have failed to note points that another may subsequently discover. And in justice to the patient as well as to ourselves it is well to verify even apparently certain data obtained by another.

The next step in the examination after all these preliminary tests (which may require more than one sitting) is to examine the refraction under a cycloplegic, which in the case of children, at least, should be atropine. At this examination the deviation should be re-examined, to determine

whether it has been increased or decreased by the cycloplegic.

Glasses, as determined under atropine, are then prescribed, a practically full correction being regularly insisted on.

If one eye is amblyopic, training to improve the sight is at once instituted. If the discrepancy between the eyes is only moderate, it may be sufficient to atropinize the good eye for a number of weeks, thus compelling fixation with the poor eye for near at any rate. If the uniocular amblyopia is more considerable, this will not suffice, and systematic exercises by bandaging the good eye must be insisted on and kept up for months.

These exercises may temporarily increase the squint. To offset this, they should be supplemented, especially as vision in the amblyopic eye improves, with exercises in recognizing and overcoming diplopia (with red and green glass and with gradually decreasing prisms) and with the amblyoscope. Tests are made from time to time to note the effects of these procedures.

Very important tests are those made from time to time—every few weeks or so—after glasses have been prescribed, to determine the effect of the latter on deviation. The immediate and remote effects are thus ascertained, it being understood that in a number of cases the complete effect produced by glasses is not obtained until five or six months at least.

By an examination conducted along these lines, coupled with the history of the case, we should be able to determine

1. The essential character of the deviation, i. e., whether it is of the congenital, the acquired, or the mixed type.

2. If the acquired or mixed type, whether the condition is basically an anomaly of convergence or divergence.

3. In that case also to what extent the acquired anomaly is dependent on refractive errors and visual defects.

4. In the case of an acquired squint, whether it is a simple or complex condition, i. e., has remained a simple convergence or divergence anomaly, or has reached the stage where consecutive changes, especially in the muscles themselves, have rendered the squint continuous and constant.

5. Whether the squint is alternating or uniocular.

6. To what extent the two eyes are capable or can be made capable of working together to secure binocular vision.

7. Whether or not the patient has retinal incongruity that either causes false projection and false diplopia or would probably cause anomalous diplopia after operation.

8. The probability of relieving a uniocular amblyopia by exercise.

9. The probability of relieving the squint itself by refractive treatment and orthoptic exercises.

The testing as well as the management of these cases, especially in the young, requires considerable patience and sometimes some ingenuity. We can only say that the result is worth the effort.

Discussion.

DR. WILLIAM ZENTMAYER, Philadelphia: We are so accustomed to be guided by Dr. Duane in our analyses of the problems of strabismus that to criticise his methods would be to criticise our own. I believe that the group of cases of congenital origin is larger than is usually supposed, and that their origin is often masked by passing into Dr. Duane's 3d group, the mixed form in which to a congenital muscular deficiency there is later added an anomaly of convergence or divergence. Many of these are cases of slight paresis. The second group, including convergence and divergence anomalies, is by far the largest, and in most instances these anomalies rest upon an ametropic basis. It is in the study of these cases we are particularly indebted to Dr. Duane, for he has taught us the importance of considering them as something more than cases of esophoria or exophoria. As Dr. Duane points out, except in very rare instances, nothing is to be expected from the treatment of congenital cases by glasses. This, I believe, is not generally understood, so we often find children with squint wearing glasses for the correction of an ametropia which plays no part in the production of the squint.

Judgment as to the proper final treatment of any case of squint must rest upon the effects of atropinization and the constant wearing of glasses correcting the ametropia, on the degree of strabismus and the amblyopia. I must admit that I have not found it practicable to make as exhaustive an analysis of the various aspects of squint in children as has Dr. Duane, and this I attribute to lack of patience and probably also of accurate observation. Many of the problems that Dr. Duane evidently early solves I am forced to defer until the child is older. The screen test I have found of the greatest value in studying the deviations in young children, while the parallax test has been unsatisfactory both in young and older patients. Some of the points in Dr. Duane's paper I have covered in the discussion of Dr. Thomson's paper.

In his very practical discussion of this problem, Dr. Thomson rightly states that the proper estimation and correction of the refraction error underlies the whole problem of the treatment of muscular anomalies. Unless the ametropia is estimated under thorough cycloplegia the glasses may fail to give relief, and a cause is then sought

elsewhere, and is supposedly found in the presence of a heterophoria (present in 90 per cent of all cases), and prisms are needlessly and unavailingly prescribed.

In determining the ocular imbalance my routine is that which Dr. Thomson outlines, with the exception that for the near test the Maddox rod is used, the fixative object being a $\frac{1}{2}$ -candle lamp. I prefer this to a displacement test, as by the latter the image is thrown on a different plane of the retina from that which it occupies in the other eye, tending thus, I think, further to complicate the problem; and that in cases that are being studied with a view of operation the field of fixation is taken in conjunction with Duane's screen test and other control procedures.

I should place more emphasis on the influence of hyperopia in the causation of convergent strabismus. In at least 95 per cent of the cases it is the cause. A possible explanation of the fact that the eye does not always become straight when the hyperopia is corrected is that divergence insufficiency has been added to the convergence excess and that the internus is in a state of spasm.

Of the plans that Dr. Thomson employs to prevent amblyopia, the use of atropine in the fixing eye seems to be the most practical. After the amblyopia has existed for a time all means fail to improve the vision to an appreciable degree, except in some cases in which the fixing eye is lost. Binocular exercise with the stereoscope and amblyoscope offer a logical, but not a very practical, means of preventing and improving amblyopia.

Tenotomies, I believe, should not be done except to meet individual exigencies of the patient, as it seems to me very bad practice to combine in one operation a tenotomy with an advancement. A unilateral or a bilateral resection and advancement should be done according to the degree of deviation to be corrected. If parallelism of the visual axes is not secured by these procedures, a tenotomy can be subsequently performed. The Worth operation, with occasional overstretching of the opposing muscle at the same time, is the operation I have mostly practised.

The mode of onset of divergent strabismus, coming on much later than does convergent strabismus, weakens the theory of failure of development of the fusion faculty to explain squint; a theory originally suggested by Verhoeff.

Tenotomy of the external rectus often affords relief in moderate degrees of divergent strabismus, especially if divergence excess is the main factor in its causation and is devoid of the danger associated with tenotomy of the internal rectus. I agree, however, with Dr. Thomson that advancements are greatly to be preferred.

Dr. Thomson's statement that the phorias are probably congenital conditions is interesting, and

coincides with the view of Landolt, who states, "that such conditions are far from always being pathologic, and they do not necessarily constitute a tendency to deviation. They show the position in which the eyes would deviate if they were no longer able to fix binocularly." I think the phorias are often the expression of disturbance between accommodation and convergence due to ametropia in eyes in which fusion is strong but out of which an actual deviation may develop if some factor is added which renders fusion more difficult.

The treatment of phorias is one of the difficult problems of ophthalmology. Its solution would be easy if the tendency to deviation of the eye told the whole story; but, as with an exophoria, we may find the same relative condition of duction as in esophoria, and, as the refraction error, the age, occupation and general health of the patients are all factors, the problem evidently becomes a complex one. The part played by disturbance of the relation between accommodation and convergence, produced by errors of refraction; convergence and divergence insufficiency and excess; subnormal innervation to the muscles; subnormal muscular tone and anatomic insertional anomalies are all to be considered. As an illustration of the first class may be noted esophoria, which is either reduced in amount or converted into an exophoria by the correction of the coexisting hyperopia; exophoria with hyperopia in which the exophoria becomes exaggerated with the correction of the hyperopia. An illustration of the second class is the increase of heterophoria or the conversion of a heterophoria into a heterotropia as the result of an exhausting illness. Examples of the third class are those cases of heterophoria in which the tropometer or the field of fixation shows a limitation of rotation in one of the cardinal directions.

Prisms have a limited field of usefulness. They are of service in pure cases of convergence insufficiency when worn for near work and may in some cases of convergence insufficiency with divergence excess be given for constant wear. In insufficiency of convergence which develops when an existing hyperopia is corrected for the first time past middle life or when presbyopia has developed and is corrected at a later period, weak prisms, with their bases in, will often render near work more comfortable. In these cases, however, prism exercise should first be tried and will be found to be of service. Occasionally in esophoria with divergence insufficiency—that is, where the esophoria is greater for distance than near—prisms, bases out, are helpful. In convergence excess a glass stronger than the total hyperopia worn for near work is at times an aid. Prism exercise in weak adduction is of positive value in relieving symptoms. Occasionally a poor convergence power is associated with good adduction. Here practising fixation of a fine

point while it is approached to the eyes in the median line is helpful.

Exercise of the conjugate movements by looking to the right and left has been advised in esophoria due to insufficiency of divergence, but I have never prescribed it. Just as convergence insufficiency with hyperopia calls for the stimulation of convergence through the accommodation by a partial correction of the hyperopia, so a weak convergence power in myopia calls for a full correction of the ametropia. Where with a myopic refraction there is convergence excess (a rare condition), a partial correction of the refraction error may relieve symptoms.

While I do not often operate for the correction of heterophorias, I have had some success with carefully performed tenotomies, small tucks by the Savage or Valk method and advancement and shortening by the O'Connor method, using fine gut.

A CLINICAL AND BACTERIOLOGICAL STUDY OF FUSIFORM BACILLUS INFECTION.*

By RALPH R. MELLON, M.Sc., M.D., Dr. P. H.,
ROCHESTER, N. Y.

THERE is a group of organisms standing in close relation with the diphtheria group on one side and the streptothrices on the other, that is usually included under the term trichomyces, or thread fungi. The fusiform bacillus is the best known member of this assemblage, although we have encountered other closely related forms, as *B. ramosus*, *B. thetoides*, etc. Because of their inability readily to infect experimental animals, their etiologic relation to human disease has been accepted with much hesitancy on the part of many.

I have suspected that our experimental failures with this group have resulted, in part, at least, from our ignorance of certain of their important biological activities, and that suspicion has been confirmed somewhat by the production of lesions, particularly in the lungs of animals, when the conditions necessary for their infection have been met. It is neither desirable nor possible to take up this phase of the question at this time, but the fact that a certain degree of success has attended our efforts may give the following findings more of significance than could otherwise justly be attributed to them.

Flexner and others have reported cases of streptothricotic pulmonary infection, simulating tuberculosis so closely that the diagnosis was usually made at autopsy. These cases are not common. I have reported a case of a very curious interstitial fibroblastic condition in the

lungs, due, I believed, to a diphtheroid organism, colonies of which occurred in purity in the tissues. The patient's serum gave immune reactions to the isolated organism, which was pathogenic for rabbits. Bunting has been able to produce diffuse pulmonary fibrosis in pigs by repeated intravenous injections of diphtheroid bacilli. I would, therefore, call your attention especially to the fact that, in *B. fusiformis* and related types, we are dealing with an organism probably closely related to the streptothrices, and perhaps to the tubercle bacillus. This may explain their seeming predilection for the upper respiratory tract. One of the commonest conditions encountered has been chronic bronchitis, which frequently was associated with so foul an odor as to merit the designation of putrid bronchitis. Almost invariably these cases have been considered tubercular, owing principally to the duration of the cough, which is usually a matter of several weeks or months. The sputum is usually mucopurulent, and in some of the older cases lymphocytes predominate. Although, in certain of the cases, particularly the more acute ones, no difficulty is experienced in finding the organisms, in others they are often restricted to little opaque spherules, or grayish-white flakes, which may represent practically pure colonies. In the absence of the tubercle bacillus, assiduous search should be made for these flakes or spherules. They are comparable to the sulphur granules of actinomycotic pus and the caseous masses of tuberculosis, although their consistency is by no means cheesy. From a total of sixty cases, constituting 9 per cent of our bacteriological examinations, 24 or 40 per cent have been confused clinically with tuberculosis.

A brief clinical résumé of one of the more extreme types of pulmonary cases follows:

The first patient was a young girl, 17 years of age. At 4 she had whooping cough, and ever since has suffered from a chronic cough with some chest pains. More than ten years ago she was sent to Saranac Lake, where Dr. Kinghorn made many examinations, but always insisted she was not tubercular, although suffering from some form of chronic pulmonary disease. Since that time, her father, himself a physician, has had her examined by many chest experts, with the almost invariable verdict of tuberculosis, although the specific bacillus has never been found in the sputum.

In addition to the chronic cough, she has had a relapsing time of fever, which is much aggravated by exercise. She also has had an occasional small hemorrhage. In fact, Dr. J. R. Williams, in whose service she was, was called to see her partly for this reason. When she entered the hospital she had a temperature of 102° and a polymorphonuclear leucocytosis of 24,000. She was under observation many weeks in the hospital, and, roughly speaking, the tem-

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

perature and leucocytosis were functions of her physical activity. The purulent sputum, which was rather profuse, showed flakes of the type already described, which microscopically were seen to consist of a pure culture of a non-acid-fast organism, fusiform in shape and decidedly granular, especially in cultures, where it closely simulated the beaded form of the tubercle bacillus. X-ray plates showed a moderate amount of bronchiectasis with interstitial fibrosis.

Under certain conditions very marked infiltration and fibroblastic changes were produced in the lungs of guinea pigs. In two of the latter, sero-fibrinous pleurisy was produced.

Case 2 was one of extensive acute bilateral empyema, diagnosed as pneumonia. At autopsy the lungs were negative. The condition was of three weeks' duration, and the last week was characterized by the appearance of mental symptoms suggestive of cerebral involvement. The spinal fluid was very purulent, the condition being one of extensive meningo-encephalitis. The only other finding of note relates to the aortic opening of the heart, whose middle valve was the seat of a friable verrucose excrescence the size of a very large pea. Section of this nodule revealed mainly necrotic material, a Gram-Weigert stain of which disclosed myriads of coccoid forms of varying size, and short curved bacillary forms, many of which showed rudimentary branching. From the pus of both pleural cavities and from the spinal fluid the same organism was isolated in pure culture.

Colonies on blood agar were medium sized, semi-transparent or translucent. Microscopically, the elements were somewhat pleomorphic; coarse, loosely wavy spiral forms predominated. Vibrio forms were also present, some of which were slightly granular at the ends, while others were somewhat club shaped and granular, resembling diphtheria bacilli. Great variation was noted in the diameter of the different curved forms, some being so slender as to simulate a loosely wavy spirochæte. Rudimentary branching was observed. Such forms were found on direct examination of the spinal fluid also. Repeated plating did not show a mixed culture. When first isolated, the culture had distinct anaerobic tendencies, but later grew aerobically.

There also occurred one case of unilateral empyema, and one of an acute bronchopneumonia whose sputa were filled with colonies of *B. fusiformis*. Cases 3 and 4 were pleural effusion, one acute, the other chronic. The acute case was of such sudden onset as to have the physical signs of a severe lobar pneumonia, but the characteristic mildness of the clinical symptoms decided the diagnosis in favor of effusion. After withdrawal of three quarts of fluid the patient made a rapid recovery. Although 20 cc. of this fluid were injected into a young guinea pig, the results were negative. The organism

resembled in its general character the one isolated from the case of empyema.

Case 5 was one of gangrenous balanitis, the so-called fourth venereal disease. It occurred in a man 55 years of age, starting on the prepuce as a small pimple. From picking and from irritation in other ways, it soon increased in size and later suppurated. The patient refrained from calling a physician for six months, despite what must have been an alarming increase in its size. When first observed, the glans and adjacent body of the penis were about the size of an orange, and where the skin and mucosa were intact the color was very dusky red. A deep gaping ulcer was eaten out of the swollen glans. The walls of this ulcer were ragged and overhanging, the one from the dorsal surface of the penis projecting in flap-like form, but partially constricted at its base by the phagedenic process. The entire ulcerous portion was deluged in a viscid purulent exudate of foul odor. Microscopically, in addition to numerous cellular elements, were myriads of fusiform organisms and long, wavy, slender, branching filaments, together with shorter, actively motile spirochæte forms. The blood culture results will be detailed later. The Wassermann and complement fixation reactions for gonorrhea were negative.

Case 6 showed a slow gangrene of the lower extremities, the symptoms, taken as a whole, suggesting Raynaud's disease. This patient gave a history of seven months' infection four years previously, followed by exacerbations from time to time. The Wassermann reaction was repeatedly negative. Amputation of one leg disclosed a proliferative, obliterating endarteritis in the tibial vessels. Stained with Gram-Weigert, there was no lack of pleomorphic bacillary and coccoid forms positive to Gram, and filamentous and rudimentary branching forms, partially or totally decolorized. The Levaditi stain for spirochætes was negative. I do not care to draw any conclusions in this case, but the demonstration of this type of organism in the lesions is of note when the pathology rules out Raynaud's disease and syphilis cannot be demonstrated.

Case 7. A young boy 12 years of age developed a slowly progressive painless monarthrit of the knee joint with effusion. No growth was obtained either aerobically or anaerobically from this fluid, but direct examination of the sediment showed granular bacillary forms, some of curved fusiform shape. Some coarse, solidly staining filaments were also present. Certain of the coccoid forms gave rise to wavy filamentous structures.

Cultures of the tonsils and throat yielded, in addition to the usual cocci, large numbers of long wavy filaments and diphtheroid forms. Some of the filaments undoubtedly arise from the ends of the diphtheroid or fusiform-like organisms and have a general conformity with those found

in the exudate from the knee joint. A tonsillectomy was followed by recovery of the patient, who has since (six months) remained well. It should be noted in addition that intravenous injections of foreign protein formed a part of the treatment.

Case 8. Another case in point was one of Dupuytren's contraction of fifteen years' standing, which followed streptococcine sepsis from accidental wound infection. For the past five years a slowly progressive general adenitis had developed and, latterly, symptoms suggestive of spondylitis. These consisted of spinal rigidity, with pain and tenderness over spinal muscles and posterior nerve roots. A pure culture of a spirillum was isolated from the tonsillar crypts, while only an occasional colony of the organism was present in the pharyngeal mucosa. Tonsillectomy in this case has resulted in the immediate disappearance of the spinal symptoms, but has had no effect as yet on the adenitis or the contracture. The patient has gained fifteen pounds in weight, and his capacity for work has been much increased.

Case group 9. There have been in all eight cases of Vincent's angina: six of the pseudo-membranous type and two of the ulcerative type. One of the latter has occurred at intervals of two and three months respectively. Of two cases of ulcerative stomatitis, one was characterized by the presence of a single large indolent ulcer on the mandible behind the last left molar tooth. The other case was of twenty-five years' duration, characterized by the presence of crops of ulcers, located particularly on the under surface of the tongue and floor of the mouth, but to some extent on the buccal mucosa as well. Occurring in a physician, they came and went without warning and without power of control on his part, until he was finally forced to resign from active practice. The fusospirillary complex was found several times during the past ten years, but was always considered in the light of a secondary invasion. The condition was associated with gingivitis, and one particularly unsanitary crown was present. Removal of the tooth on which it was located revealed myriads of these organisms around its root, one fang of which had suffered necrosis to the extent of half its substance. There has been no recurrence since the tooth was removed.

Case group 10. There were three cases of chronic gingivitis: one in a boy aged six years, from very good hygienic environment, was of interest. This child suffered from progressive loss of teeth. The mother said they simply dropped out, one by one, without apparent cause. The appearance of the gums was good, with the exception of a slight dusky hue. No exudate was visible, although a swab passed over the gums revealed rather numerous pus cells and

large numbers of long wavy filaments, with a few fusiforms.

Cases 10 and 11. I have observed two cases of pharyngeal and tonsillar mucositis (mycotic pharyngitis). Clinically, these cases were characterized by the presence of whitish-yellow, cone-shaped elevations attached to the mucosa of the tonsils and their crypts and the pharyngeal wall near the uvula. The adherent quality of these elevations was their most noteworthy characteristic, it being impossible to detach them even with an instrument. Histologically, they were characterized by an hyperkeratosis of the mucosa, replacing all but its deepest layer. Between the lamellæ composing these nodules, numerous bacillary filamentous forms and cocci were observed.

In certain of the cases, filaments and cocci, or filaments originating from cocci have been found in the blood; and in the case of gangrenous balanitis, these organisms agglutinated the patient's serum in 1:40 dilution. The nature of the blood culture findings is such as to make their detailed discussion inapplicable here.

Other cases showing similar findings are, briefly: one mastoid abscess ending fatally, organisms recovered in purity; and several of postpartum fever, in which no organism could be found in the discharges, but which may have originated from a severe gingivitis, showing fusospirillary organisms (Vincent's) and will be further discussed in connection with the blood-culture results. Organisms of the type under consideration were recovered from one extremely interesting case of toxic hyperchromatic anemia simulating pernicious anemia, arising probably from intestinal ulcers, and a case of unilateral salpingitis, non-gonorrheal in origin.

Résumé.

In this locality during the past year certain members of the trichomyces group of organisms have been found with considerable frequency, particularly in conditions of the upper respiratory tract. In certain instances the infection becomes generalized. The most prevalent type of case is a chronic bronchitis which at times may be of long standing and which may closely simulate tuberculosis.

The pathological rôle of *B. fusiformis* and related organisms may be of greater significance than has been supposed. The results of the blood cultures, particularly in cases with positive immune reactions, is suggestive. The presence of filaments in the blood of cases having local infections of this sort must be accounted for, and the conditions of their growth are such that they may easily be overlooked. It is probable that some of the cocci grown from the blood are secondary invaders, as it is becoming better established that the latter may invade the organism under a variety of conditions. The finding

of such organisms in mildly febrile puerperal cases in which local uterine signs are negative suggests that the susceptible pregnant state may permit their entrance into the blood from a focus of distant low grade infection, for example, in the mouth. In the few cases we have had, their disappearance from the blood was coincident with defervescence.

Metastatic foci may at times arise in these cases and isolation of the organisms in purity be accomplished. This fact, together with their apparent prevalence, does not justify us in regarding them solely as saprophytes.

THE DETERMINATION OF CARDIO-VASCULAR LESIONS IN THE DRAFT SOLDIERS INDUCTED INTO SERVICE AT CAMP GORDON, GA., AND THE EFFICIENCY OF THE METHODS EMPLOYED.*

By ANDREW MAC FARLANE,
ALBANY, N. Y.

FROM May 25 to September 25, 1918, 67,565 drafted men were inducted into service at Camp Gordon, from the following States:

Georgia	26,239
New York	11,532
Ohio	9,494
Tennessee	7,591
Iowa	6,064
Illinois	5,491
Alabama	1,154
	67,565

Three hundred and seventy-three of these were immediately discharged for cardio-vascular lesions upon entrance into camp as a result of the physical examination.

Georgia	149	.56%
New York	74	.64%
Ohio	43	.45%
Tennessee	45	.59%
Iowa	20	.33%
Illinois	28	.51%
Alabama	14	1.20%
	373	.552%

The cardio-vascular lesions were:

Mitral Insufficiency	85	23.2%
Mitral Stenosis	24	6.5%
Mitral Double	17	4.6%
Aortic Insufficiency	26	7.0%
Aortic Stenosis	1	0.3%
Myocarditis, Chronic	34	9.2%
Hypertrophy with Hypertension	50	13.2%
Hypertrophy without Hypertension	5	1.4%
Tachycardia, Persistent	76	20.5%
Irritable Hearts	49	13.2%
Pericarditis, Adhesive	1	0.3%
Aortitis	1	0.3%
Aneurism, Traumatic (Brachial)	1	0.3%
	100.0%	

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 7, 1919.

* The efficiency of these examinations is due to the splendid co-operation of the cardio-vascular examiners—Contract Surgeon Geo. A. Bachman, Capt. M. J. Radin, Lieuts. D. J. Swan, H. B. Weiss, Capt. J. L. Giddings, Lieuts. L. N. Gav, T. McC. Mabon, S. S. Beverly, C. E. DeMay, M. Lobenz, E. D. McCarty, E. Black, and Capts. Lackey, Washburne and Atchley.

One case was a man with marked anæmia probably due to hookworm.

Records of two cases lost.

Two cases of dextro-cardia (*situs viscerum transversus*) were detected—one in the preliminary cardiac examination and the other by a general examiner, who saw at first glance a right varicocele and then examined and found the abnormality.

All case of mitral regurgitation without evident hypertrophy and without accentuation of the second pulmonic sound, which were recognized, were accepted but not included in this table.

In this differentiation all aortic lesions were regarded as regurgitant unless the physical signs indicated a pure stenotic lesion as occurred in one instance.

Cases were denominated as myocarditis chronic when manifesting faint and impure sounds without murmurs, irregularities, poor response to exercise, history of a severe infection and slight dilatation; cases of hypertrophy with a systolic blood pressure of 150 mm. and over, were classified as hypertrophy and hypertension, while those in whom the systolic blood pressure was less than 150 mm. were called hypertrophy without hypertension.

The fact that many of these men had just arrived in camp after a long railway journey in crowded cars and that a number had eaten and drank too freely before leaving home, due to the injudicious entertainment of oversolicitous and unwise friends, made the determination—whether a tachycardia was pathological or not—the most difficult problem coming before the Cardiac Board. The cases, however, which presented the picture of irritable hearts were placed in that group. Tachycardias associated with hyperthyroidism have not been included as they have been classified as neurological cases.

These examinations although covering apparently 110 days were actually made in about one-third that time. During the periods of incoming draft increments, 1500-1800 recruits were examined daily in order to determine promptly the fit and the unfit.

The preliminary cardiac and pulmonary examinations were made in a large room of a barrack building which was of necessity noisy and open to outside sounds. The preliminary Cardiac examiners were six in number and referred all cases of *Suspected Cardio-Vascular Disease* to the referees (2 in number) who later subjected these cases to a second examination. This later examination was made in the upper story of the same barrack building, which was also open, noisy and presented little opportunity for careful, painstaking work. The examination had to be completed in the same day so as not to interfere with the orderly running of the organization and not clog up the induction of the draft. No accessory aids to diagnosis except the

COMPOSITE SUMMARY OF 361 CASES OF CARDIAC CASES.

Lesions and No. Cases	Occupation	History of Previous Illness	History of Symptoms	Objective Symptoms Before and After Exercise	Apex Beat	Apex from Mid-sternal Line	Thrills	Sounds and Murmurs	Pulse Rate	Blood Pressure
Mitral Insufficiency, 85.	Nothing of note.	Rheumatism, 90%. Malaria, pneumonia, typhoid, syphilis, aa, 15%.	Dyspnoea, pain, palpitation, common.	Slight pallor, cyanosis and tremor in 20%.	Inter-space 5	Av. 11 cm. Hg. 13 cm. Low 10 cm.	20%	P. 2 + 35%. Systolic apical murmur in every case.	Slightly accelerated.	B. P. and ratio normal.
Mitral Stenosis, 24.	Nothing of note.	Rheumatism, 90%. Pneumonia, 36%. Malaria, 30%. Typhoid, 25%. Syphilis, 6%.	Dyspnoea, palpitation, giddiness, aa, 95%; pain, sweating, aa, 70%.	Marked cyanosis, pallor and tremor, 25%. Marked dyspnoea.	5 in 6th	Av. 8.5 cm. Hg. 12 cm. Low 6 cm.	87.5%	1st sound + 84%. P. 2 + 88%. Presystolic murmur, 100%.	Somewhat increased.	B. P. and ratio practically normal.
Double Mitral, 17.	Nothing of note.	Rheumatism in almost every case. Malaria, 41%. Pneumonia, typhoid, aa, 33%.	Dyspnoea, pain, palpitation and fainting in most of the cases.	Cyanosis and tremor marked, 50%. Marked dyspnoea.	5 2 in 6th	Av. 10.2 cm. Hg. 13 cm. Low 7.5 cm.	50%	P. 2 + and double mitral murmur in every case.	Slightly accelerated.	B. P. and ratio practically normal.
Aortic Insufficiency, 26.	Heavy. Moderate, 27%.	Rheumatism, 70%. Syphilis, 30%.	Dyspnoea, palpitation, aa, 80%. Giddiness, 72%. Sweating, 65%. Pain, 61%.	After exercise, marked dyspnoea and cyanosis, 80%.	5-80% 6-20%	Av. 10.4 cm. Hg. 17 cm. Low 8 cm.	27% apical shocks, 15.3%	Distant indistinct sounds, 66%. Basal diastolic murmur, 100%.	Slightly accelerated.	Systolic pressure always above 150 mm. Average ratio, 7:2.
Myocarditis, Chronic, 34.	Nothing of note.	Rheumatism, 80%. Malaria, 40%. Syphilis, 25%. Pneumonia, 30%. Typhoid, 20%.	Dyspnoea, pain, palpitation, giddiness in practically every case.	Cyanosis and tremor in almost every case. Marked dyspnoea.	5-91% 6-9%	Av. 9.1 cm. Hg. 14 cm. Low 7 cm.	44%	Indistinct muffled sounds, 66%. Systolic apical murmur, 24%.	Irregularity.	B. P. slightly higher. Ratio practically normal.
Hypertrophy and Hypertension, 50.	86% Laborers.	Rheumatism, 82%. Malaria, 44%. Syphilis, 24%. Typhoid, 22%.	Pain, dyspnoea, palpitation, giddiness very common.	Cyanosis, pallor and tremor in a few cases. Marked dyspnoea after exertion.	5-86% 6-14%	Av. 9.5 cm. Hg. 13 cm. Low 7 cm.	Rare	Booming first sound, 44%. Apical murmurs, 24%.	Slightly accelerated.	Systolic blood pressure over 150 mm. Ratio normal.
Irritable Hearts, 49.	Sedentary. Light.	Rheumatism, 63%. Malaria, 26%. Typhoid, 4%. Pneumonia, 30%.	Marked dyspnoea, pain, palpitation, flushing, sweating, dizziness for years.	Marked cyanosis, giddiness, tremor, extreme dyspnoea.	5	Normal slight Hypertrophy in 3 cases.	47%	Apical impure sounds, 66%. Basal impure sounds, 57%. Murmurs, 12%.	Marked tachycardia and pulse lability.	Blood pressure higher than normal; also pulse pressure.
Tachycardia, Persistent, 76.	Nothing of note.	Rheumatism, 72%. Malaria, 39%. Typhoid, 23%. Pneumonia, 22%. Syphilis, 15%.	Dyspnoea, pain, palpitation very common. Less tremor and sweating than in Irritable Hearts.	Marked cyanosis and tremor, but none so intense as in Irritable Hearts. Marked cyanosis.	5	Normal slight Hypertrophy in 9 cases.	30%	Apical impure first sounds, 21%. Murmurs, 9%.	Marked tachycardia.	Blood pressure slightly higher than normal. Ratio normal.

physical examination was possible.

Each cardiac examiner looked over daily 250-300 men, taking less than 2 minutes for each man. These examinations were made in groups of four men and consisted of inspection of precordial area and vessels of neck, palpation of precordium, auscultation of heart, observation of exercise response (dyspnoea-cyanosis), re-auscultation. A statement of the physical findings thus found was made but not a diagnosis. No opportunity for history was possible except in very exceptional cases. The daily work was done in eight hours and approximately 3.3 per cent of the men examined were referred to the referees as cases with *Possible Cardiac Lesions*, either functional or organic. Of these referred cases one in six were declared by the referee to be unfit for military service, while the others were found to be apparently free from cardiac disability from the standpoint of Army Regulations.

When one considers the speed at which each examiner worked and the inevitable noise and confusion incident to the work, together with the distraction from passing automobiles, bands of music and the drilling of recruits, it is surprising the efficiency attained, as determined by the above classified rejections, which are less than previously found and by the small number and type of cases which later broke down during the subsequent drilling. It is only fair to state that on account of the urgent need of men on the firing line, the drilling period was most intensive and the usual three months' training was accomplished in five to six weeks.

DEDUCTIONS.

Mitral Stenosis.—Usually not well developed men. No case was diagnosed as mitral stenosis unless definite presystolic murmur was brought out after exercise and especially when he had assumed the recumbent position.

Double Mitral Lesions.—The history and symptoms were more striking than in the single lesions.

Aortic Insufficiency.—History of heavy and moderately heavy work in two-thirds of the men. History of syphilis in 30 per cent. If a Wassermann test had been possible in each case, this etiological factor would probably have been more prominent. The diastolic basal murmur was detected in every case. At times it was more difficult to hear and apparently audible only in the 3d or 4th left interspace close to the sternum. The diagnosis was usually suggested by the marked hypertrophy of the heart and the high pulse pressure. 19 of these 26 men were 21 to 25 years of age inclusive.

Myocarditis, Chronic.—History of a recent severe infection; some enlargement; faint or impure sounds with few murmurs; poor response to exercise; irregularities; slight increase in blood pressure with no change in ratio.

Hypertrophy and Hypertension.—Usually muscular men who had been laborers. Hypertrophy of the left ventricle with thickened vessels. Blood pressure high but ratio normal. Free from tachycardia, tremors, sweating.

Tachycardias.—In the beginning a sharp distinction was not drawn between cases of "Irritable Heart" as such and simple "Persistent Tachycardia." It soon became apparent, however, that a difference existed and an attempt was then made to separate them in our records.

Irritable Hearts.—A highly nervous man who in civil life followed a light or sedentary occupation. History of rheumatism and especially of syphilis was less marked than in any other cardiac lesion. Markedly cyanotic especially the extremities, with cold, clammy hands and feet. Tremor practically always present, apex beat in normal position; marked tachycardia and pronounced lability of the pulse; apical thrills common, first sound at apex is usually indistinct or booming, suggestive of a murmur, and the second pulmonic sound is apt to be accentuated. Blood pressure is above normal and the pulse pressure is often high.

The physical findings in many of these cases are suggestive of mitral stenosis, but usually when the symptom-complex of "Irritable Heart" is thoroughly appreciated, the perplexity disappears.

Tachycardia Persistent.—The soldier with simple persistent tachycardia is not evidently nervous and not often cyanotic. Tremors are not so common and thrills are rare. The position of the apex beat is normal and the sounds are generally clear with few impurities at apex or

base. The blood pressure is less than in cases of "Irritable Heart" and the average pulse pressure is 35 mm. in contrast to 50 mm. in the "Irritable Heart."

The high incidence of malaria is due to the fact that more than half of these recruits came from the South (Georgia, Tennessee and Alabama). History of syphilis is usually a poor basis for statistics, but it is highly suggestive that such history was present in the following proportions: Aortic regurgitation, 30%; myocarditis, 25%; hypertrophy and hypertension, 24%; mitral regurgitation, 15%; mitral stenosis, 8%; irritable heart, 4%.

One of the striking findings of this summary was the very frequent occurrence of subjective symptoms—the importance of which is so suggestively and illuminatingly presented in a recent work by MacKenzie and upon which physicians generally have not placed sufficient stress.

All these 57,840 men (9,725—(14.3%))—were rejected by the entire physical examination board) inducted into service at Camp Gordon, remained in this camp during their entire period (5-6 weeks) of intensive training and were dispatched from here directly to the port of embarkation. It is reasonable to suppose that all recruits having disabling cardiac lesions which had been overlooked at the time of entrance into camp, would have manifested symptoms during this period of intensive training occurring in the hot summer months—June, July, August, September. A survey and an analysis has been made of all the cardiac cases of this group discharged by the S. C. D. Board.

Every soldier who seemed for any physical reason unable to keep up with his military work is examined by his regimental surgeon. If his condition is such as to warrant a discharge, he is sent directly to the S. C. D. Board for their action. If his symptoms are less serious or obscure, he is kept in quarters or sent to the Base Hospital for observation and treatment and later a disposition is made of his case.

In contra-distinction to the work of the Physical Examining Board in which *speed* with efficiency is the dominating factor, the work of the S. C. D. Board is slowly and carefully done with all aids, when necessary, of a Base Hospital and a well-equipped laboratory.

Recently an excellent modification of this system has been inaugurated. The old Physical Examining Board has been reconstructed and in addition to its former duties, it has also been made a Classification and Elimination Board. Every soldier, except those acutely ill, who is unable to do his full military duty is sent before this board for classification. If he is deemed fit for military duty (Group "A"), he returns to his

command; if he is found to have a remediable defect (Group "B"), he is transferred to the Development Battalion; if he has an irreducible defect (Group "C"), he may be used for limited service which will not augment his disability. If he is found totally unfit for any military service

(Group "D"), he is recommended to the S. C. D. Board for discharge.

The S. C. D. Board has discharged (May 25th to November 15th) for disabling cardiac lesions 55 cases (6 men included in this number are now in the Base Hospital awaiting final action).

Name	Examiner	Findings on Preliminary Examination	Findings on Examination By Referee	Referee	S. C. D. Findings
S. J. C.	A	Negative.			Aortitis and myocarditis chronic. Syphilis 6 years.
J. C. B.	B	Hypertrophy.	Hypertrophy not disqualifying.	X	Mitral insufficiency with hypertrophy.
R. B.	C	Hypertrophy. Tachycardia. Systolic murmur at apex.	Hypertrophy and murmur not disqualifying. Tachycardia not persistent.	X	Myocarditis chronic and mitral insufficiency.
H. E. C.	D	Systolic apical murmur. Tachycardia.	Not disqualifying.	X	Mitral stenosis.
B. N. C.	A	Tachycardia.	Not persistent.	Y	Myocarditis chronic, contracted bronchitis a week after induction diagnosed as T. B., pulmonary, chronic, active.
E. C.	B	Murmur.	Not disqualifying.	X	Mitral stenosis.
R. E. G.	E	Irritable Heart. Tachycardia.	Not disqualifying.	Y	Myocarditis chronic. Viscer-optosis. Poor physique.
G. J.	F	Tachycardia.	Not persistent.	X	Myocarditis. Mitral stenosis.
A. J.	G	Negative.			Myocarditis chronic.
J. T. L.	G	Tachycardia. Dyspnoea.	Not persistent.	Y	Mitral stenosis.
J. J.	H	Tachycardia.	Not held up. Clerical error.		Mitral insufficiency.
A. R.	D	Systolic aortic murmur.	No evidence of murmur. Impure 1st sound. Moderate hypertrophy.	Y	Myocarditis chronic, hypertension. A. S.
S. S.	D	Negative.			Myocarditis chronic.
G. S.	I	Negative.			Aortic insufficiency.
R. T.	H	Negative.			Aortic and mitral insufficiency.
E. E. C.	I	Systolic murmur pulmonary area.	Not held up. Clerical error.		Myocarditis chronic.
W. L.	B	Negative.			Myocarditis chronic.
M. M.	C	Tachycardia.	Not persistent.	X	Myocarditis chronic.
C. E. S.	C	Negative.			Aortic insufficiency.
J. S.	K	Negative.			Myocarditis chronic.
B. W.	K	Tachycardia.	Not persistent.	X	Mitral stenosis.
O. W. W.	C	Tachycardia; apical systolic murmur.	Not persistent. Not disqualifying.	X	Myocarditis chronic.
F. C. B.	L	Tachycardia; systolic murmur at apex.	Not disqualifying. No evidence of murmur.	Y	Myocarditis chronic.
L. J. C.	M	Negative.			Mitral insufficiency.
J. K.	J	Tachycardia.	Tachycardia not persistent. Possible irritable heart.		Myocarditis chronic.
J. J.	G	Negative.			Myocarditis chronic.
J. C.	B	Negative.			Mitral insufficiency.
R. H.	J	Arrhythmia.	Occasional extrasystoles not disqualifying.	X	Myocarditis chronic with regurgitation. Syphilis 7 years ago.
J. S. H.		Valvular lesion.	No evidence of valvular lesions.	X	Myocarditis chronic.
O. J. E.	F	L. V. Hypertrophy; systolic murmur at apex.	Murmur not disqualifying.	X	Mitral insufficiency.
M. C.	C	Negative.			Tachycardia moderate. Hypertrophy and hypertension. Myocarditis.
W. D. C.	J	Presystolic murmur.	Not held up. Clerical error.		Mitral stenosis.
W. H. B.	N	Negative.			Mitral insufficiency with hypertrophy.

Name	Examiner	Findings on Preliminary Examination	Findings on Examination By Referee	Referee	S. C. D. Findings
J. R. C.	G	Negative.			Myocarditis chronic.
C. C.	B	Negative.			Tachycardia persistent.
G. F.	G	Tachycardia.	Tachycardia not persistent.	X	Tachycardia persistent.
H. K.	J	Negative.			Tachycardia persistent.
J. L.	K	Negative.			Myocarditis chronic.
W. J. R.	F	Tachycardia.	Tachycardia not persistent.	Y	Tachycardia persistent.
H. W. W.	K	Apical systolic murmur.	Not persistent.	W	Double mitral.
S. W.	C	Negative.			Aortic insufficiency.
J. C.	B	Negative.			Mitral insufficiency with hypertrophy.
G. B. S.	J	Tachycardia.	Tachycardia not persistent.	W	Irritable heart.
C. M.	G	Negative.			Mitral insufficiency.
J. D.	H	Negative.			Mitral insufficiency.
F. J. McC.	G	Negative.			Mitral insufficiency.
W. J. W.	J	Tachycardia.	Tachycardia not persistent.	Z	Irritable heart.
L. C. R.	J	Negative.			Mitral insufficiency with hypertrophy.
A. J.	O	Negative.			Irritable heart.
B. J.	N	Tachycardia.	Tachycardia not persistent.		Irritable heart.
O. H.	C	Negative.			Irritable heart.
G. A. R.	K	Negative.			Myocarditis chronic.
C. C. S.	K	Negative.			Mitral stenosis.
W. B. R.	I	Tachycardia.	Tachycardia not persistent.	Z	Mitral stenosis.
J. J. K.	J	Tachycardia.	Tachycardia not persistent.	Y	Myocarditis chronic.
J. N. B.	G	Negative.			Mitral insufficiency.

CARDIO-VASCULAR CASES OF DRAFT

DISCHARGED BY S. C. D. BOARDS UP TO NOVEMBER
20, 1918

Organic Lesions:	Cases	Per cent
Mitral insufficiency	13	23.6
Mitral stenosis	8	14.5
Double mitral	1	1.9
Aortic insufficiency	4	7.3
Myocarditis	20	36.3
Functional Cardiac Lesions:		
Irritable heart	4	7.3
Tachycardia persistent	5	9.1
	55	100.0

Organic lesions were not recognized in 24 cases by the preliminary examiners (1 in 2,815 cases). Errors made by the temporary examiners (12) assigned for brief periods to assist the Cardiac Board were almost twice those made by the permanent examiners (3). The referees failed to find disabling lesions in 18 cases out of 2,263 referred for possible cardiac lesions (1 in 126) although an abnormal condition was recognized in practically every case. If cases of mitral insufficiency (13) and of myocarditis (20) are not included as the first when without hypertrophy was accepted according to instructions and the second might easily have developed to an appreciable extent during the military training, then the Cardio-Vascular Board can be held strictly responsible for only 13 * failures to recognize organic cardiac lesions in 67,565 examinations.

108 cases of functional heart disease, largely "Irritable Heart" have been unable to do full military duty and have been transferred to the

* Three of these cases, on account of clerical error, never came before the cardiac referees, thus leaving only ten organic cases not recognized by the examining board.

Development Battalions; 23 of these have been returned to full military duty; 40 have been assigned to limited or domestic service and 17 have been discharged for physical disabilities other than those of the heart; 3 have been discharged for cardiac disabilities and 25 continue in the Development Battalion.

HEALTH WORK IN THE SCHOOLS IN
NEW YORK STATE.*

By WILLIAM A. HOWE, M.D.,

ALBANY, N. Y.

HEALTH work in the schools in New York State as it is being conducted at present, might well be classified under the following subdivisions:

1. School buildings and grounds.
2. Physical Education.
3. Mental Hygiene.
4. Mouth Hygiene.
5. Nutrition.
6. School Nursing.
7. Medical Inspection in Schools.
8. Health Education.

The general administration of all of these health activities in the public schools in the State is under the direction of the State Commissioner of Education. Each subdivision of the work is administered by a specialist appointed for that purpose by the State Board of Regents upon recommendation by the State Commissioner of Education. The specialist in each line is

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

held responsible for the administration of the work entrusted to his or her care. There is no part of the work that does not come into co-operative articulation with every other part of the general health program. The correlation of these various health activities is becoming more and more closely established and will in a brief time be fully accomplished. While adequate funds are not as yet available for the proper administration of the comprehensive health program of the State Education Department in the schools in the State, material progress is being made along definite lines, for the improvement of health and sanitation in our schools.

1. *School Buildings and Grounds*—This Division, as its name implies, has supervision of school buildings and grounds. All plans for the construction of new buildings or the alteration of old ones, must be submitted to the director of this division for examination, and must be approved by the Department before construction can go forward. Matters pertaining to heating, lighting, ventilating, seating, cleaning, and school grounds come under the direction of this division. While much is being accomplished in this special phase of our health work far more could be done, if sufficient funds were available with which to extend the work. Further provision for this purpose is greatly needed. Many of us have failed to appreciate fully the close etiological relation existing between school building conditions, and the health and physical fitness of teachers and pupils. Many of the acquired physical defects of school children are due to existing causes within the buildings in which the pupils are housed. It is the purpose of the Department to reduce these harmful conditions to a minimum, and to maintain a high standard of health equipment in school buildings for the safety and well-being of the children of the State.

2. *Physical Education*—The legislature of 1916 provided that all pupils above the age of eight years, in all elementary and secondary schools, shall receive physical training as a part of the prescribed course of instruction. A comprehensive course of instruction was adopted by the Regents of the University and has been in operation for the past four years. The physical training movement in the schools of the State has been a great stimulus to other phases of health education or health work in the schools. It is the best financed of any part of our health work and is well organized. The State Education Department has a staff of twenty-seven people to supervise and direct the work in physical education. There are 800 special teachers in physical education employed in the schools in the State.

Our State program of physical education has been particularly beneficial in bringing joy and recreation to the great mass of the boys and

girls of the State. Health habits are emphasized, natural play is promoted. Refreshing and invigorating exercise tends to neutralize the degenerating effects of prolonged sedentary curriculum requirements. The educational values of play are recognized and physical education has come to be a part of and not a thing apart from the regular school curriculum. Games and play serve as attractive sources of educational development, promoting happiness, interest, obedience, correct posture and bearing, alertness, respect for authority, orderly conduct, courtesy, self-restraint, a sense of justice and duty, and a spirit of co-operation under leadership.

3. *Mental Hygiene*—The work of Mental Hygiene was begun in 1918. It is under the direction of the mental diagnostician of the State Department of Education. Associated with him is an expert to organize special classes for children who are found to be three years or more backward in mental development. Special attention will also be given to the supernormal or precocious child. Classes are now being conducted for backward children in forty-six cities in the State, while in thirty-seven others classes are being organized. This feature of our health work in schools will meet an urgent educational need for thousands of children who in the past have been greatly neglected.

The value of segregation of the seriously retarded child in a special class is not only very great to such child, but also to the normal and very bright children who are held back by the presence of the dull child in the regular class, and, last but by no means least, to the teachers whose burdens are lightened in every way by such segregation.

The movement to make three general divisions on the basis of mentality—dull, average (or normal), and very bright—with classes for each, is rapidly growing. It is a big step forward in school mental hygiene. Such classification should be made by means of psychometric tests. The State Department in its Mental Hygiene Service is organizing and supervising this work and as far as time allows is actually giving psychometric tests in schools that are not equipped to give their own.

The recognition of individual differences in school children and the application as far as possible of education suited to individual needs and capabilities is the great task for mental hygiene to perform. Indeed, herein lie both the present need and the future goal of all education.

4. *Mouth Hygiene*—This feature of our health work is under the direction of the State Oral Hygiene Inspector. There are at present thirty school dental dispensaries in operation in the State exclusive of cities of the first class. Nearly 400 dentists have designated free dental hour service to deserving children in their

offices in various parts of the State. Standard dental forms have been prepared and are in general use throughout the State. The Oral Hygiene Committee of the State Dental Society, The Rochester Dental Dispensary and others have given generous aid in extending the work throughout the State. It is becoming more and more evident that a good dental equipment and a clean mouth are potent contributing factors to good health at any age, while a poor dental equipment and an unclean mouth are a distinct menace to health. Mouth hygiene is one of the biggest and most difficult health problems with which we have to deal among school children. Its solution must be sought in preventive dentistry. All agencies doing corrective work must teach preventive dentistry. We must so instruct our school children in preventive dentistry that they will acquire good dental habits early in life.

5. *Nutrition*.—No phase of our health work has grown so rapidly during the past two years as that relating to nutrition. The expert in charge of this work has stimulated State-wide interest in nutrition in both rural and urban communities. Hundreds of school districts are weighing and measuring their children every month with scales owned by the school and keeping a careful record of results. In many places, where children are found to be 10 per cent or more under weight, nutrition classes are being formed in which individual attention is given to diet, to rest, to exercise and to the general physical condition of each undernourished child. A mid-morning lunch of milk and crackers is given to children who are 10 per cent or more under weight. Hot school lunches are being served in many rural schools today and the movement is rapidly extending. Wonderful results have been accomplished by this plan.

Several careful and extensive nutrition surveys have been made during the past year in different parts of the State. The one in Erie County, including nearly all pupils in communities with less than 1,000 population, indicated that 20 per cent of the children were 10 per cent or more under weight. A similar survey of nearly 5,000 children in the schools of Syracuse gave 19½ per cent as undernourished to the same extent. It will be noted that the percentage of undernourished children is practically the same in both rural and urban communities. It is becoming more and more evident that proper or well-balanced nutrition is the basic necessity of normal mental and physical growth. It is equally true that unbalanced or improper nutrition exerts its greatest influence both directly and indirectly on the health and physical fitness of growing children.

6. *School Nursing*.—There are approximately 225 school nurses under the general supervision of

the State supervising nurse. These nurses are devoting full time to health work in schools. In addition to these there are nearly 500 other nurses in the State who are doing some health work in schools. Three years ago there were 100 school nurses in the State exclusive of cities of the first class. About forty of our school nurses are employed in districts with a population of less than 5,000. Twenty-two nurses are doing school nursing and physical training. In these cases special preparation in physical training is required of the registered nurse. All school nurses are required to be registered. It is desirable that they should have special training in public health administration. Definite instructions are issued to them as to their duties. They are required to submit monthly reports of their services and results obtained to the district or districts employing them. As the services of the school nurse are largely educational, we advise boards of education to employ full time nurses in districts having 1,000 or more children in attendance. In a community of this size there should be a full time public health nurse and a full time school nurse. They should assist each other in every possible manner and there will be plenty of work to keep them busy. By such a plan far better results will be accomplished in all forms of health work in the community.

Where only one nurse is available for all forms of health work, it is essential that all of her services relating to the schools shall be under the direction of the school authorities, to whom she must submit her reports. In such cases it is equally as essential that she should be under the direction of and responsible to the other agencies uniting in her employment while she is doing other than school work. In many communities the health work in schools would be a failure without the services of the school nurse, as no attention would otherwise be given to the details so essential to its success.

In her health work in the schools she co-operates with parents, teachers, medical inspectors, physical trainers, physicians and dentists, and all others in the community interested in the health of children.

Her greatest success lies in her ability to give individual attention to children with physical defects and to see that proper attention or treatment is given to them. She must be tactful, intelligent, observant and thoroughly interested in her work.

7. *Medical Inspection in Schools*.—The State Medical Inspector of Schools has direction of this phase of the health work. To aid him there are two assistant medical inspectors, and an instructor in hygiene. Much of the program of health work in schools, as presented in this paper, has been stimulated from the first by the provisions of the Medical Inspection Law, enact-

ed in 1913. Our State Medical Inspection Law does not apply to cities of the first class, or to private or parochial schools. In many localities the parochial schools, by request, receive the regular health service, as furnished by the public school system. This plan is very satisfactory and should be encouraged.

About 700,000 school children and 37,000 teachers come under the provisions of the medical inspection law. There are approximately 1,000 school medical inspectors in the State, as at present card indexed in the Department.

EXAMINATIONS FOR THE PAST THREE YEARS

During the past three years, our medical inspectors and other physicians have made 1,276,602 physical examinations of school children. This is 75.1 per cent of all the pupils registered in the schools from which reports were received during that period.

661,749 physical examinations were made in cities and villages with more than 5,000 population.

614,853 physical examinations were made in communities with less than 5,000 population, or in rural districts.

In cities and large villages 71.8 per cent of the registered pupils were examined.

In rural schools 79.1 per cent of the registered pupils were examined. 7.3 per cent more of the registered pupils were examined in the rural schools than of those in the cities.

DEFECTS FOUND

458,855 physical defects were found and reported to us from cities and large villages.

527,472 physical defects were found and reported to us from rural schools.

The percentage of defects found, in relation to the number of pupils examined was, in cities 69 per cent and, in rural schools, 85 per cent.

DEFECTS TREATED OR CORRECTED

In cities and large villages 154,833 or 33.7 per cent of all defects reported were treated, or corrected.

In rural communities 113,816, or 21.5 per cent of all defects reported were treated, or corrected.

12.2 per cent more defects were corrected in cities than in rural sections.

SUMMARY OF RESULTS FOR THREE YEARS

Physical examinations made.....	1,276,602
Percentage of registered pupils examined	75.1
Number of defects reported.....	986,327
Number of defects treated.....	268,649
Percentage of all defects treated.....	27.2

These results, especially in corrective work, have been made possible by the generous co-operation of hundreds of the best men and women in the medical and dental professions in the State, by special opportunities extended to deserving cases by hospitals and dispensaries in every locality, by a splendid spirit of co-operation by other State departments, and by many agencies interested in the betterment of the health and physical fitness of children.

8. Health Education.—Health education is placed last in the list of activities in health work in schools, as it is regarded as the basic part of the whole program and is the most potential and far-reaching in its influence on results to be accomplished.

The chief aim of school health service is the prevention and correction of such physical defects as may interfere with the child's normal progress in school both mentally and physically. It is the purpose of the Education Department, through its various agencies, to give to every child a thorough education and training in all matters pertaining to physical and mental health, and the means by which health is to be attained and preserved. In other words, as soon as the child's formal education begins he must be taught the things that pertain to his personal health and the sanitation of his surroundings, and this teaching must continue throughout his school career. He must learn by doing—that is, he must practise the precepts taught in the school in order that he may form and develop health habits that shall guide him in wholesome living and thinking. In his progress through school he must receive school credits for health achievement, as well as for achievement in his other courses of study.

This work has been going on for several years, stimulated by health clubs and parent-teachers' organizations in our schools. Our medical inspectors and school nurses have aided by giving lectures and demonstrations in the schools, and our teachers of hygiene and physiology, as well as our physical trainers, have begun to stress the importance of health habits and health achievement in general.

All the health agencies participating in health work in the schools will be closely co-operative in presenting a progressive course of health education and health achievement, beginning with the first school year and continuing through the high school. In carrying out this plan it will be necessary to give increased attention to health education in our normal schools and teachers training classes, to the end that our teachers may be thoroughly equipped for this branch of education in whatever grades they may later be required to teach. This phase of our work is making progress in our normal schools.

It must be evident to all physicians that health education is the *first* duty of our health work in schools and not the *last*; that it is not the least but the greatest instrument in our hands for protecting the children of school age and preparing them for long and useful lives after leaving school. It is also a function belonging strictly to the schools; one that cannot be delegated successfully to any other agency. The public has always looked to the schools to train the young intellect. It is beginning to hold the school responsible for the training of the young body also, and expects the school to return the child to society at the end of eight, ten or twelve years, not merely as sound and healthy as when it entered school, but, if possible, sounder and healthier and with a better prospect of long life and usefulness.

The child that has learned the fundamental principles of right living often becomes a teacher of its parents and brings about a reformation in its home. Health education beginning in the school is propagated not only to the home but to the ends of the earth through the energy of the young enthusiast. If school children accept our teachings, everybody will come under the influence of the health propaganda eventually.

Let us bear in mind one of the mottoes of the State Education Department: *First health, then wisdom; healthy children make a strong nation.*

REPORT OF THE COMMITTEE ON THE COMPUTATION OF THE PERCENT- AGE OF OCULAR DISABILITY DUE TO INJURY.*

THE Committee appointed by the Section on Eye, Ear, Nose and Throat of the Medical Society of the State of New York herewith submits the following report:

1. That vision, being a complex function, the three essential elements of vision, central visual acuity, field vision and stereoscopic vision (the single binocular function), should be considered in computing a percentage loss of vision, and that these elements should be computed in the proportion of 2/5 for central visual acuity, 2/5 for field vision and 1/5 for stereoscopic vision.

2. That the test-types used in determining central visual acuity should conform to the standard as adopted by the American Ophthalmological Society.¹ These test-types are constructed in geometrical progression and conserve the Snellen optotypes of equal ratio.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

3. That, in accordance with the principles laid down above and approved by this Section, a table of approximate percentages of vision and of visual disability has been compiled.

4. That, in accordance with the request of this Section, the following resolution was presented to the House of Delegates:²

WHEREAS, There is urgent need for some uniform, authoritative system or method for determining the percentage loss of vision in workmen who have suffered partial loss of sight; and whereas, the Committee appointed by the Section on Eye, Ear, Nose and Throat of this Society, which has given this matter considerable study for two years, presented a report at the last meeting, which was unanimously accepted, and has prepared a working method for the computation of partial loss of vision based on the consideration of the three essential factors of vision, central visual acuity, field vision and stereoscopic vision; be it resolved, That the House of Delegates of the Medical Society of the State of New York approve the method therein set forth.

This resolution was unanimously adopted by the House of Delegates of the Medical Society of the State of New York.

The table of percentage of visual disability, with explanations embodying these recommendations, is appended.

ALBERT C. SNELL, Chairman,
ARTHUR J. BEDELL,
JOHN E. VIRDEN,
Committee.

TABLE OF PERCENTAGE VISION AND OF
VISUAL DISABILITY.

Record of Central Visual Acuity at 20 Feet.	Record of Central Visual Acuity at 6 Meters.	Record of Central Visual Acuity at 5 Meters.	Percentage of Central Visual Acuity.	Percentage of Average Stereoscopic Vision.	Percentage of Average Field Vision.	Total Vision. Central Vision, Stereoscopic Vision Field Vision	Percentage of Total Visual Loss.
20/20	6/6	5/5	100	100	100	100	0
20/25	6/7.5	5/6.25	92	100	100	97	3
20/32	6/9	5/8	84	100	100	93.5	6.5
20/40	6/12	5/10	76	90	100	88	12
20/50	6/15	5/12.5	68	80	100	83	17
20/65	6/18	5/16	60	70	90	74	26
20/80	6/24	5/20	52	60	80	65	35
20/100	6/30	5/25	44	50	70	56	44
20/125	6/36	5/32	36	40	60	46	54
20/160	6/48	5/40	28	30	50	37	63
20/200	6/60	5/50	20	20	40	28	72
20/250	6/75	5/62.5	12	10	30	19	81
20/320	6/90	5/80	4	0	20	10	90
20/400	6/120	5/100	0	0	10	4	96
10/250	6/150	5/125	0	0	0	0	100

APPENDIX TO THE REPORT.

By ALBERT C. SNELL, M.D.,
ROCHESTER, N. Y.

THIS table indicates the percentages of vision and of visual disability corresponding to the measurement of central visual acuity as usually expressed in feet and in meters, the three essential component elements of vision, central visual acuity, stereoscopic vision, and field vision, being considered in the ratio of 2/5 for central visual acuity, stereoscopic vision, and field stereoscopic vision.

The measurement of visual acuity is based on the visual angle of five minutes, and the series of numbers used in the table are in complete sequence and in definite, uniform, geometrical progression. The numbers expressing visual acuity are practically those of Snellen, with revisions by Green³, which have been the accepted standards for the past fifty years. Test letters expressing visual acuity in a progression of exactly ten feet, as 20/20, 20/30, 20/40—20/100, 20/110, 20/120, etc., are not expressive of a uniform, equal gradation based on visual angles. Therefore, these gradations are of unequal value, whereas the numbers in the table are founded on a definite geometrical ratio, the common ratio being $X = \sqrt[3]{.5}$. Assuming industrial blindness to be reached when central vision has fallen to 20/320 (which is generally accepted), there are twelve equal steps or gradations between this and perfect central vision. Therefore, it must be obvious that with each step or gradation downward, the visual acuity must decrease 1/12, or approximately 8 per cent, and that this quite accurately expresses the amount of useful visual acuity (central vision) in percentages. (See fourth column of table.)

In placing the other two factors of vision, stereoscopic vision and field vision, in a percentage table, we have been guided by experience and the weight of authority. Since single binocular vision and its functions are only slightly interfered with when there is a central visual acuity of 20/40 or better, is very good with a visual acuity of 20/100, and is usually completely lost when visual acuity falls below 20/250, we have taken these figures as a basis, and have placed the decreasing values of this element in a descending decimal progression.

Since field vision is usually not materially interfered with until central visual acuity falls below 20/50, and is usually of little or no value when the visual acuity falls to 10/250, we have also placed this factor in the table in a descending decimal progression, using these measures as extremes.

Placing these three factors in their relative places and reckoning the percentage of vision as a whole, considering these three essential factors of sight in the ratio of 2/5 for central visual

acuity, 1/5 for stereoscopic vision, and 2/5 for field vision, we obtain the percentage of total vision, corresponding to the visual acuity as scientifically expressed in feet and in meters. (Column seven of the table.)

The table as a whole should be regarded as expressing an approximate percentage value of vision which will meet any ordinary case and should be a practical help and guide in determining partial loss of vision. There are some unusual conditions that cannot be fitted into a numerical table. These latter may be computed by using the method of computing percentage loss of vision as suggested by the writer⁴ last year. In fact, the percentage of vision may thus be computed for all cases, and it will be found that the result obtained will quite accurately coincide with the table. There has been one alteration in the detail of this method in regard to the percentage factor of visual acuity. When considering the element of central visual acuity, instead of using the decimal fraction obtained by reducing the scientific expression for visual acuity, we use the percentage of central visual acuity, as shown in the new table, column four.

In this method we use the working formula, total vision = $\frac{2}{5}$ central visual acuity + $\frac{1}{5}$ stereoscopic vision. If we let V signify vision taken as a whole, C—central visual acuity, F—field vision, and B—single binocular function (stereoscopic vision), we have

$$V = \frac{2}{5} C + \frac{1}{5} F + \frac{1}{5} B,$$

$$\text{or} \quad V = \frac{2C + 2F + B}{5},$$

or multiplying both the numerator and the denominator by 50 which does not change the value of the fraction, we have

$$V = \frac{100 C + 100 F + 50 B}{250},$$

This places on an exact percentage scale all three essential elements of vision and the percentage of total vision can easily be computed. Element B being 50 is always $\frac{1}{2}$ its percentage total.

For example, suppose we find that central vision is 20/40, that the field is full, and that stereoscopic vision is 10% defective; then 20/40 being the third step or gradation, means that the central visual acuity is 76%, F is 100%, and B is 90%.

$$\begin{aligned} \text{Therefore, } C &= 76 \\ F &= 100 \\ B &= 45 \text{ (being } \frac{1}{2} \text{ of } 90) \end{aligned}$$

$$\underline{221}$$

$$\underline{250}$$

$$= 88\% \text{ vision, or visual disability of } 12\%.$$

For other examples, see *NEW YORK STATE JOURNAL OF MEDICINE*, July, 1919, which also gives the details of the method for computing the percentage of the visual field and of stereoscopic vision.

For measuring the various gradations of stereoscopic vision there is at present no very satisfactory apparatus which can be obtained from the supply houses. But we hope that very soon there will be such an apparatus on the market. Several practical kinds have been suggested by those interested in the subject.

The proposition that when any element of vision is present but not in actual use (being potential only) as in aphakia, diplopia, ptosis, paralysis of ocular muscles, etc., that such element or elements should be computed at $\frac{1}{2}$ of their percentage value, has met with general approval.

BIBLIOGRAPHY.

1. Green: Standard Test-Types. *Trans. Am. Ophthal. Society*, Vol. X, p. 190.
2. *New York State Journal of Medicine*, Vol. 20, No. 4, p. 131.
3. Green: Acuteness of Vision. *Trans. Am. Ophthal. Society*, Vol. X, p. 644. A New Series of Test-Letters for Determining the Acuteness of Vision. *Trans. Am. Ophthal. Society*, 1867-8, p. 68.
4. Snell: A Method of Computation for Ocular Injuries, Etc. *New York State Journal of Medicine*, July, 1919.

Medical Society of the State of New York

County Societies

COLUMBIA COUNTY MEDICAL SOCIETY.

SEMI-ANNUAL MEETING, COPAKE FALLS, N. Y., TUESDAY,
MAY 11, 1920.

The meeting was called to order at the Taconic Inn, the following were present: Members, Drs. Conklin, Diefendorf, Edwards, Garnsey, Galster, Harris, Johnson, Mambert, Nichol, Niver, Oliver, G. W. Rossman, C. G. Rossman, Southworth, Tracy, Vedder, Waterbury, Wheeler, Whitbeck and Skinner.

Guests, Dr. Luther Emerick, President Third District Branch, and Dr. J. S. Lawrence, State Department of Health.

An invitation was extended to the Third District Branch to hold its next annual meeting at Hudson.

SCIENTIFIC SESSION.

Address—Luther Emerick, M.D., Saugerties.

The proposed Health Center Law—J. S. Lawrence, M.D., Albany.

Acute Mastoiditis—Frank B. Wheeler, M.D., Hudson.

Surgical Diseases of the Stomach—Sherwood V. Whitbeck, M.D., Hudson.

THE MEDICAL SOCIETY OF THE COUNTY OF JEFFERSON.

SEMI-ANNUAL MEETING, WATERTOWN, N. Y.
THURSDAY, MAY 6, 1920.

The meeting was called to order at the Black River Valley Club, with an attendance of 35 members.

An invitation was extended to the Fifth District Branch to be the guest of the Society in 1921.

Drs. G. D. Gregor and I. W. Brewer were delegated to represent the Society at the hearing of the Chiropractic Bill, before the Governor.

Elmer E. Eddy, M.D., chairman of the committee to consult with supervisors in an effort to raise rates on county charges, reported considerable progress.

SCIENTIFIC SESSION.

Radium Treatment of Malignant Diseases—Thomas P. Farmer, M.D., Syracuse.

This paper was widely discussed by Drs. Kellow, Gregor, McCaw.

The Status of Medicine in New York State—I. W. Rose, M.D., State Board of Health.

War Experiences—Page E. Thornhill, M.D.

As Dr. Thornhill was the first man from Jefferson County to reach the front line, this fact was ordered inscribed in the minutes of the Society.

James F. McCaw, M.D., delegate to the State Society read his report and the society placed itself on record as opposed to the bill to allot delegates by ratio per capita members of societies.

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

REGULAR MEETING, ROCHESTER, N. Y., TUESDAY, MAY
18, 1920.

The meeting was called to order by the President, Dr. E. Wood Ruggles.

The minutes of the last meeting and the minutes of the Comitia Minora were read and approved.

It was moved by Dr. Dow and seconded, that the President appoint a Committee of three to draft resolutions referring to laws governing Insanity Cases and report at the next meeting.

The President appointed Drs. E. B. Angell, E. L. Hanes and W. J. Herriman.

Dr. William I. Dean, presented the following resolution which was adopted:

Resolved, that practising physicians who are referring patients to advertising concerns for diagnostic purpose should be censured.

A copy of this resolution to be sent to the Secretary of the Dental Society.

SCIENTIFIC SESSION.

Diseases and Focal Infections in Adult Life from the Standpoint of Preventive Medicine. Edward Clark, M.D., Buffalo.

The paper was discussed by Dr. Winans.

Minor Maladies and the Practice of Medicine—Charles R. Witherspoon, M.D., Rochester.

Discussed by Drs. Angell, Sager, Palmer, Wolff and Dean.

Cystitis as an Incomplete Diagnosis—Arthur H. Paine, M.D., Rochester.

Discussed by Dr. Mellon.

OSWEGO COUNTY MEDICAL SOCIETY.

SEMI-ANNUAL MEETING, ORWELL, N. Y., TUESDAY, MAY 18, 1920.

The Committee appointed to arrange for the Centenary Anniversary in October reported as follows:

That a two-day meeting should be held in October; a dinner be given to members and visitors, under charge of an entertainment committee; that arrangements be made for the entertainment of ladies accompanying the members and visitors, under charge of a special committee. A tentative program was also presented on which every speaker was a man of wide renown.

Report was accepted and the Committee continued.

Four practitioners of the county were elected to membership, and two retired physicians were made honorary members.

Of the 67 physicians now in active or partial practice in the county, 53 are active members.

The scientific program, which was one of the most interesting and instructive ones ever presented by the Society was as follows:

Practical Points in the Diagnosis of Heart Disease—W. D. Alsever, M.D., Syracuse.

The X-Ray in Chest Lesions, with Lantern Slides—Donald S. Childs, M.D., Syracuse.

The Surgery of the Handicapped Patient—William D. Johnson, M.D., Batavia.

Diseases and Focal Infections in Adult Life from the Standpoint of Preventive Medicine—Herman F. Seftner, M.D., Buffalo.

After inspection of the County Sanitarium the Society adjourned.

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN.

SEMI-ANNUAL MEETING, SARANAC LAKE, N. Y., TUESDAY, MAY 11, 1920.

The meeting which was held in the Free Library Building, was preceded by a dinner at the Berkley Hotel.

The business session was called to order by the President, Dr. Sidney F. Blanchet, at 3 o'clock, with the following present members: Drs. L. Brown, R. M. Brown, E. R. Baldwin, Cone, Paterson, Packard, Trembley, Van Dyke, Farrell, Emans, Bray, Finney, Sprague and Dolphin. Visitors: Dr. M. E. Rose, State Department of Health, and several members of the Saranac Lake Nurses' Association.

The minutes of the last meeting and the report of the Comitia Minora were read and approved.

Nominations of officers being next in order the President appointed the following nominating committee: Drs. L. Brown, P. E. Dolphin, and E. R. Baldwin. The Committee presented the following candidates: President—John White, Malone; Vice-President—Edward N. Packard, Jr., Saranac Lake; Secretary and Treasurer—George M. Abbott, Saranac Lake; Censor for three years—John W. Kissane; Alternate to State Society—Frank F. Finney.

By vote of the Society the report of the committee was approved.

Communications were read from the Treasurer of the State Society in regard to the special per capita charge of \$2.00 voted by the House of Delegates.

The bill to license Chiropractors to practise in this State was taken up and discussed at length, and the following resolution, with the names of all the members of the Society to be attached, offered by Edward R. Baldwin, M.D., was unanimously passed.

Resolved, that the Franklin County Medical Society appeal to the Governor to veto the Chiropractic Bill, as the Society believes that it is very detrimental to the interests of the people of the State.

The Secretary was instructed to send this resolution in the form of a night letter to the Governor.

Dr. John E. White, was appointed to represent the Society at the hearing on this bill before the Governor.

On motion of Dr. Lawrason Brown, a collection was taken up to defray the expenses of Dr. White.

The measure before the Legislature, to Establish Medical Centers throughout the Rural Districts of the State was favorably discussed by Dr. E. R. Baldwin.

The following papers were read and discussed:

Tuberculosis of the Intestines—Lawrason Brown, M.D., and H. L. Sampson, M.D. Discussion by Drs. Paterson and R. M. Brown.

The Present Day Milk Problem, Charles C. Trembley, M.D.

The Present Status of the Practice of Medicine throughout the Country and especially in the State of New York—M. E. Rose, M.D., New York State Department of Health, Albany.

Mechanical Factors in Hemoptysis—Edward N. Packard, M.D.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

SEMI-ANNUAL MEETING, CAMBRIDGE, N. Y., TUESDAY, MAY 11, 1920.

The meeting was called to order in the Library Building at 11:30 A. M.

Members present, Drs. Leonard, Heath, Paris, Pashley, Munson, Heenan, Stillman, Ketcham, Sumner, Casey, Prescott, Oatman, and Blackfan. Visitors, Drs. Fortaine, Duffy, Kenneth Blackfan, Seftner, Ingram, and Godfrey.

The minutes of the last meeting and the minutes of the Comitia Minora were read and approved.

The Committee on the Mary McClellen Hospital reported progress. Moved and carried that the Committee continue its investigation and report at an early date.

Moved and carried that the Secretary notify the Governor that this society is unanimously opposed to the Chiropractic Bill.

A paper on Diphtheria Carriers was read by William L. Munson, M.D., and discussed by Dr. Godfrey.

AFTERNOON SESSION, 2:30 P. M.

Address, Vice-President, on State Medicine, W. A. Leonard, Cambridge.

Discussed by the members present. Drs. Leonard, Sumner and Pashley were appointed a committee to consider the subject and report at the next meeting.

The Sensitiveness of Children to Various Proteins, Kenneth Blackfan, M.D., Asso. Prof. Pediatrics Johns Hopkins University.

Dr. Blackfan was given a rising vote of thanks.

Diseases of Adult Life and Focal Infections—H. S. Seftner, M.D. Dr. Seftner was also given a rising vote of thanks.

THE MEDICAL SOCIETY OF THE COUNTY OF CAYUGA.

REGULAR QUARTERLY MEETING, AUBURN, N. Y., THURSDAY, MAY 13, 1920.

The meeting was held in the Woman's Union Building, and owing to the absence of the President, was called to order by Dr. Charles L. Lang. Dr. Oscar B. Swayze was made the presiding officer for the evening.

Dr. Louis F. O'Neill, was reported as representing the Society at a hearing in Albany before Governor Smith, voicing the opposition of the Society to the Ames bill for the licensing of Chiropractors.

SCIENTIFIC SESSION.

Prognosis in Operation—E. S. VanDyyn, M.D., of Syracuse University.

Discussion by Drs. F. W. Sears and E. N. Boudreau. Diseases and Focal Infections in Adult Life from the Standpoint of Preventive Medicine—H. F. Seftner, M.D., State Department of Health.

Lethargic Encephalitis—F. W. Sears, M.D., State Sanitary Supervisor.

New Health Center Bill—J. S. Lawrence, State Department of Health.

Luncheon followed the meeting, with A. W. Gilmore, M.D., presiding at the coffee urn.

Mrs. C. L. Lang, of Cato, and Miss Ruth Stevens, of the County Laboratory, were guests of the Society.

THE MADISON COUNTY MEDICAL SOCIETY.

REGULAR MEETING, CANASTOTA, N. Y., TUESDAY, MAY 4, 1920.

The meeting was called to order at the Masonic Temple, with a large number of the physicians of the county present.

A unanimous vote of sympathy for Dr. Cavana on account of a fall received on February 2d was passed.

A unanimous vote of sympathy was also passed for Mrs. Joseph E. Clark, on account of the recent death of her husband, sanitary supervisor of this district.

Drs. Brooks and Pfaff reported the proceedings of the State Society meeting.

THE MEDICAL SOCIETY OF THE COUNTY OF SENECA.

REGULAR MEETING, SENECA FALLS, N. Y., WEDNESDAY, MAY 12, 1920.

The meeting was called to order at The Gould, by the President, Dr. Thomas F. Cole.

The following officers were nominated for election at the Annual Meeting in October: For President, William H. Montgomery, Willard; Vice-President, Thomas J. Currie, Willard; Secretary and Treasurer, William M. Follette, Seneca Falls; Censors, Frederick W. Lester, Carroll B. Bacon, William H. Montgomery; Delegate to State Society, Robert M. Elliott; Alternate, C. Anna J. Brown.

On motion of Dr. Lester, an extra assessment of \$1.00 per member was made to pay expenses of the Society. Seconded and carried.

Dr. Knight moved that bills incurred incident to this meeting be paid by the Secretary from the funds of the Society. Seconded and carried.

An invitation received from Dr. Robert M. Elliott, Willard, inviting the Society to meet at the Hospital in October was accepted.

The subject of fees in surgical cases, also the fees for office consultations and visits produced an unusual display of oratorical pyrotechnics, those who especially distinguished themselves were Drs. Carleton, Franz, Ostrander, Gordon, Letellier, Lester, Brandt and Gant. The subject was brought to a close by Dr. Knight's motion, that the County Committee on Revision of Fees, revise the schedule and report at the Annual Meeting, the Secretary to notify the members of the Committee.

A communication was read from the State Commissioner of Health, Dr. Biggs, advising the Society of the importance of a representative at the hearing on the Chiropractic Bill, at Albany, May 13, 1920. On motion of Dr. Lester, Dr. Letellier was elected to represent the Society at such hearing. Carried.

SCIENTIFIC SESSION.

Pathology of Tuberculosis of the Lung—F. W. Sears, M.D., Syracuse.

Venereal Infection—J. S. Lawrence, M.D., Albany.

Surgical Treatment of Chronic Diarrhea,

Technic of Ano-rectal Operation Under Local Anæsthesia—S. G. Gant, M.D., New York. (Illustrated by motion pictures.)

Disease and Focal Infection in the Adult—H. F. Seftner, M.D., Albany.

On motion of Dr. Frantz, the Society extended a vote of thanks to Drs. Sears, Lawrence, Gant, and Seftner.

There being no further business, the meeting adjourned to meet at Willard in October.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

PASTEUR—THE HISTORY OF A MIND. By EMILE DUCLAUX. Late member Institute of France, Professor Sarbonne and Director Pasteur Institute. Translated and edited by Erwin F. Smith and Florence Hedges, Pathologists of U. S. Department Agriculture. Octavo, 363 pages, illustrated. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$5.00 net.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By GEORGE W. NORRIS, M.D., Asst. Prof. Medicine Univ., Pennsylvania, and Henry R. M. Landis, M.D., Asst. Prof. Medicine Univ. Pennsylvania, with a chapter on Electrocardiograph in Heart Disease, by Edward Krumbhaar, Ph.D., M.D., Asst. Prof. Research Medicine Univ. Pennsylvania, Second Edition, Thoroughly Revised; 844 pages, 433 illustrations. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$8.00 net.

A TEXT-BOOK OF PHYSIOLOGY, for Students and Practitioners of Medicine. By RUSSELL BURTON-OPITZ, M.D., Ph.D., Asso. Prof. Physiology, Columbia University, N. Y. Octavo Vol. 1, 185 pages, 538 illustrations, Phila. and London. W. B. Saunders Co., 1920. Cloth, \$7.50 net.

SURGICAL SHOCK AND THE SHOCKLESS OPERATION THROUGH ANOCI-ASSOCIATION. By GEORGE W. CRILE, M.D., Prof. Surgery, School Medicine, Western Reserve Univ., Cleveland; and WILLIAM E. LOWER, M.D., Asso. Prof. Genito-Urinary Surgery School Medicine, Western Reserve Univ., Cleveland. Second Edition of "Anoci-Association" Thoroughly Revised and Rewritten. Octavo 272 pages, 75 illustrations. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$5.00 net.

DISEASES OF THE NERVOUS SYSTEM. A text-book of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M.D., and WILLIAM A. WHITE, M.D. Third Edition, revised, rewritten and enlarged. 1018 pages, illustrated with 470 engravings and 12 plates: W. B. Saunders Co., Phila. and New York, 1919. 8vo, \$8.00.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D., San Francisco, California. Sixth Edition. 12mo, 424 pages. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$3.00 net.

ARTERIOSCLEROSIS AND HYPERTENSION WITH CHAPTERS ON BLOOD PRESSURE. By LOUIS M. WARFIELD, A.B., M.D., F.A.C.P. Third Edition. Published by the C. V. Mosby Company, St. Louis, Mo. Price, \$4.00.

Deaths

HENRY J. ALLEN, M.D., Corinth, died May 26, 1920.

LYNDON B. CADY, M.D., New York City, died May 13, 1920.

H. HOLBROOK CURTIS, M.D., New York City, died May 14, 1920.

J. LINDSAY PORTEOUS, M.D., Yonkers, died May 13, 1920.

ALVIN H. SCHWAB, M.D., Brooklyn, died May 15, 1920.

FERDINAND SIEGEL, M.D., Brooklyn, died May 25, 1920.

CHARLES S. STARR, M.D., Rochester, died March 8, 1920.

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No. 7

EDITORIAL DEPARTMENT

PUBLIC HEALTH.

ONE of the recent issues of the Monthly Bulletin of the New York State Department of Health is devoted to public health education, a subject vital to improvement in public health and community welfare. We may well be proud of the results achieved by this arm of State service and the physicians of the State should lend every aid to further these meritorious efforts. Many of the comments bear repetition.

Public sentiment is the one dynamic force of sufficient power to insure necessary compliance with health rules and regulations. Without it, health authorities cannot hope to secure adequate health law enforcement, and with it, any law, no matter how drastic, can be effectively enforced for the benefit of the life and health of the many, even though it be to the detriment of the few. Recognizing these facts, the State Department of Health, though possessing and occasionally being obliged to use mandatory powers, relies largely for the accomplishment of its aims, not upon edicts and prosecution, but upon that voluntary co-operation which develops as a result of a general comprehension of and the need for public

health regulations. Such an understanding on the part of the public can only be obtained through a broad program of public health education thoughtfully conceived and efficiently carried out by the utilization of every legitimate means for bringing the facts convincingly to the people.

Since the State Department of Health has been assigned the responsibility of securing compliance with health laws and regulations, it follows that one of its first duties is to acquaint the public with these laws and the basic principles underlying them in order that the necessity for strict obedience to these mandates may be fully understood. The methods employed in bringing health facts before the public vary according to conditions and the exact end sought. Broadly speaking, the method to be used in any given case is the one which will best carry the message and impress it indelibly on the mind of the people.

For many years the more thickly settled sections of the State have been distinctly at an advantage in benefiting by the modern methods of public health education. Owing to the difficulties incidental to transportation and to handling the details of educational campaigns in the more re-

mote sections, the State Department of Health has recently designed a large automobile truck called the *Healthmobile*, by means of which it is hoped to give these rural communities the benefit of much work which has hitherto been confined to more central places. This car carries an electric generator, a storage battery equipment and a large motion picture machine of the highest quality. It makes possible the showing of motion pictures in rural communities where the necessary facilities are not otherwise available, and also enables the transportation of speakers, literature and exhibit material to practically any point within the State. The car has a picture screen which may be erected on the roof of the car or at any selected point out-of-doors thus making the unit independent of local sources of electricity or even a suitable hall. When it is found desirable to hold such health meeting in a church, grange hall or school, the electric current can be carried into the building from the generator.

Naturally in the use of this outfit there are many problems and difficulties, and considerable expense is incurred in its operation. All charges are met by the Department of Health and the local community is asked to do nothing beyond supplying a hall if one is desired and giving such co-operation as is necessary to insure successful meetings. The car is kept constantly on the road during the summer months, a day being spent in each place visited. The morning is used for moving from one town to another and in setting up. In the afternoon child welfare demonstrations and examinations are conducted, and in the evening the large open meeting is held with addresses and motion pictures.

In planning a campaign of this character it is necessary to have ample time for making arrangements, for working up publicity and for securing local co-operation. It is impracticable to hold single isolated meetings in remote places and a campaign should be planned systematically to cover all towns within a broader area during the period for which the car is allotted to the district.

In any local health campaign, the State Department of Health is in position to render valuable assistance, but sometimes communities do

not avail themselves of this service, probably because they are not familiar with the material and facilities which the Department has to offer. While it is undesirable that the Department should intrude where local initiative has resulted in a community developing its own plans, co-operation and assistance from the Department may often enable a local health agency to benefit greatly from the experience of others in problems of organization and of popular health education. Such local initiative and the needs of the individual community should be the basis for determining if assistance from the Department is desired in outlining a policy or in carrying out a program already determined upon. If such assistance is desired it will be rendered by the State Department as far as facilities permit. Sometimes questions of sanitary engineering are involved, sometimes a child welfare program is under way, in other cases tuberculosis clinics are desired or perhaps the community is interested in the venereal disease problem. Nearly every division of the Department is in a position to co-operate with any local health committee which will make its wants known.

THE LEGISLATURE.

LEGISLATIVE activity in recent years in matters of social welfare, public health and medical practice affecting the status of the physician, has begun to focus the attention of the medical profession on the legislative branch of the government. In order that such activities may be conducted in a most efficient manner, it is essential that legislators should be selected with proper care and that their deliberations should, as far as possible, be controlled by rules of justice not influenced by political expediency. In this connection an interesting article has appeared in a recent number of *The Searchlight*, extracts from which are most instructive.

Long experience and careful study have demonstrated that the rules of legislative procedure in this State must be revised if the representative, democratic character of the Legislature is to be maintained and the highest public interests

of the State and its local divisions conserved. Before the next Legislature convenes, a definite program of desirable changes in the rules of procedure should be framed and an opportunity afforded for a thorough discussion by the legislators-elect. The following constructive comment from *The Searchlight* is well worth perusal:

Since 1913 experience has shown that more radical reforms are necessary if the underlying evils of our legislative system are to be eradicated. In general the most serious evils fall under the following heads:

1. The glut of legislation in the closing hours of the session.
2. The arbitrary control of the Rules Committee.
3. The dilatoriness of the Legislature in acting on measures before it.

The New York Legislature has a larger bulk of legislation to consider every year than any other State legislative body. It has been the policy of the Legislative leaders to meet this situation by the creation of a large number of committees by means of which it was assumed the proposals could be considered under logical classifications. The experience of other States has proved, however, that a smaller number of committees makes for greater expedition and greater efficiency. To-day one member is compelled to serve on a number of important committees. A smaller number of committees with a single committee appointment for each member would be an improvement. Several States have adopted this reform with good results.

THE CLOSING DAYS

The glut at the close of the session can be eliminated in various ways as the experience of other States have proved. One suggested change has to do with the introduction of bills. At present, March first is set by the Assembly Rules as the last date of introduction of local bills. There is no such limitation in the Senate. If the limitation were extended to both houses and it were also provided that committees must report all local legislation by April first, a considerable improvement could be brought about. Another

suggestion that would have practically the same result is that every committee should report every measure before it within thirty days after receiving it. This requirement might provide either that committees should report every bill in their possession either favorably or unfavorably, or that they should report favorably or unfavorably such bills as they choose, after which all other legislation referred to them would automatically become "dead." Several States have adopted similar provisions and they have proved effective. A rule that every matter reported adversely should be voted upon, and if the measure is defeated it could not thereafter be introduced at that session of the Legislature, might also contribute to the desired end.

RESULTS TO BE ACCOMPLISHED

The proposals above outlined would have two salutary results: One would be to force the Legislature to begin its real legislative duties earlier than at present. One great fault of the Legislature as pointed out by Speakers Wadsworth and Smith has been that it has done little or no work of importance during the first two months of the session. The proposed changes would force the Legislature to begin work immediately. Another good result of the limitation on the consideration of local bills or the requirement of a report within thirty days, would be that the earlier portion of the session could be devoted largely to a consideration of local legislation which could be passed upon and out of the way before the closing weeks of the session, leaving the last fortnight or so to be devoted to a consideration of general legislation of State-wide importance. Such a division of the session could not but result in furthering the interest of the cities and villages of the State and in its practical results it would mean a greater consideration of the principles of municipal home rule. It would, moreover, eliminate the present evil, encouraged by the legislative leaders, of having local legislation held up until the last weeks of the session in order that it might be used ~~for trading and log-rolling purposes~~ or as a useful instrument to help the Rules Committee in putting through its legislative program.

FORUM

"HEALTH CENTERS"

NEW YORK CITY, June 18, 1920.

To the Editor NEW YORK STATE JOURNAL OF MEDICINE:

During recent years there has been in New York State a distinct movement toward what has come to be known as "the socialization of medicine." During its early stages the movement made itself felt in the broadening out of the functions of the Department of Health with the establishment of tuberculosis hospitals and clinics and the increase of the State and city facilities for laboratory diagnosis.

In 1914 the movement was greatly accelerated when the Workmen's Compensation Act went into effect. This Act recognized the responsibility of industry and of the State in the surgical care of industrial accidents. There has been on the part of physicians much dissatisfaction with the workings of the Compensation Act and in many cases the objections to the manner in which it functioned have been well grounded, but, in the main, most physicians agree that industrial injuries are being better treated today than ever before.

Shortly after the introduction of the compensation principle the attempt was made to introduce the State-wide principle of compulsory health insurance for all wage-earners. This law has never been passed by the Legislature, its passage being defeated largely through the efforts of the medical societies of this State. Whether the societies have acted wisely or unwisely in opposing health insurance is for the individual physician to decide. Governor Smith and the New York State Reconstruction Commission have both endorsed the principle of health insurance and a bill was introduced in the State Senate during the 1920 session by Senator Davenport, but it was not brought to a vote.

Under the consideration of the health of the inhabitants of New York State, Governor Smith on January 7th of this year recommended the improvement and extension of health centers, and this recommendation was endorsed by findings of the State Reconstruction Commission. On March 25, 1920, Senator Henry R. Sage and Assemblyman H. Edmund Machold introduced in the Legislature a bill to provide for the establishment of health centers throughout the State.

This bill known as the Sage-Machold bill has the approval of the State Charities Aid Association and of Dr. Herman Biggs, the Commissioner of Health of the State of New York.

Doctor Biggs states that the passage of the health center bill is desirable because:

(a) The number of physicians in practice in small cities and in rural districts is steadily decreasing. (58 sections are now said to be without physicians.)

(b) Trained nurses are lacking in many districts and even when available it is becoming more and more impracticable for the average individual to obtain or to pay for their services.

(c) Servants are difficult to obtain and consequently hospital care becomes increasingly more imperative. Hospitals at present are inadequate.

The Sage-Machold bill may be described briefly as an attempt to make modern scientific medical care available to the residents of rural districts and industrial communities at cost, or free, if necessary, and in general to improve the health of the inhabitants by authorizing the establishment of health centers. The bill provides State aid for health centers under the conditions that they fulfill the requirements laid down by the act and that the details of the plan meet with the approval of the Commissioner of Health.

The bill provides that in each district the health center shall be under the control of a district board of

health of five members, at least one of whom shall be a physician. The board appoints a district health officer (full time) for a term of six years. The health center is established by the local board of supervisors and may include: (a) The erection of hospitals; (b) Clinics for out-patients; (c) Clinical, bacteriological, X-ray, and chemical laboratories (auxiliary to State laboratories); (d) Public health nursing for all parts of the district; (e) Medical inspection of school children; (f) Periodical physical examination of the inhabitants of the district; (g) The headquarters of other public health, medical, nursing and other public agencies which desire to use the same.

There is to be appointed a board of managers of seven members for the health center, two of whom shall be physicians. This board of managers appoint the superintendent of the center (the district health officer may be appointed to this office) and appoint and fix the salaries of the attending physicians, and fix the fees to be charged for medical services. They also appoint a medical board to have charge of the medical and surgical affairs of the health center.

The health center is to be financed by: (1) State grants for the establishment of the center, for the maintenance of the laboratories, and for the current expenditures for free treatments; (2) Appropriations by the local public authorities; (3) Fees from pay patients.

How may this bill if enacted as part of the State law effect the private physician? In the first place, it creates in each health district the office of district health officer, a full-time position. This will of necessity cause the appointment of a certain number of physicians as public health officers. Next, it provides for paid physicians in the employ of the public as attending physicians at the hospitals and dispensaries of the health centers. This will require a large number of part-time health officers. Third, it provides for laboratory facilities and X-ray examinations to be paid for at cost. This would naturally be expected to decrease the work of this sort now being performed in private laboratories. Fourth, it provides consultation service, diagnostic facilities, etc., within the reach of all. This should assist local practitioners and make for a better type of medical practice.

The medical profession must meet the issue clearly. It is not sufficient to say that the problem of untreated disease does not exist and consequently no solution is required, as has been said of health insurance. Every thinking physician knows that the problem does exist and that an early solution is demanded. If physicians know of a better solution than health centers or health insurance it should be brought forward, but if not they should concentrate their efforts on the solutions which are proposed and endeavor to mold legislation so that it may work the greatest good for all concerned.

Commissioner Biggs in speaking of health centers says: "The enactment of this bill (the Sage-Machold bill) and the establishment of such health centers as are here provided for will greatly aid in the co-ordination of all the public health and welfare activities of the district; will prevent overlapping of effort, promote economy in administration and make possible the extension of an efficient health service to every portion of the district. It will also contribute materially to the improvement and the extension of all health activities and will render them far more effective."

From an economic standpoint the introduction of health centers should furnish medical care to the person in moderate circumstances at less cost than under the present system. It inaugurates on a wide scale the principle of group practice and thus makes for better diagnosis and treatment.

It further introduces a new principle in the care of the sick poor and that is the financial reward to the

physician for services rendered. It has been the custom for physicians to devote a large part of their services to dispensary or hospital practice for which they are seldom paid. With the increased cost of living it has been more and more difficult to secure physicians for work of this sort, so that at the present time the so-called "dispensary problem" consists almost entirely in an effort to secure physicians as assistants in the various clinics. In the rural districts, where free dispensaries are not available, the cost of X-ray and laboratory examinations render these diagnostic aids unavailable to a large percentage of the population, so that, even when a physician is found who is willing to treat without remuneration those unable to pay, the treatment of the poor is inadequate and unsatisfactory. The principle of adequate payment for the physician is a step forward and should meet with the approval of the medical profession.

It has been said that the health center bill has been introduced as an alternative and substitute for health insurance. In the opinion of the writer this is not necessarily true, for there is nothing in either bill which would prevent the full functioning of the other. The health center bill aims primarily to care for the sick poor and to present to the community modern scientific group diagnosis and treatment under the supervision of the State. Health insurance contemplates the care of the health of the wage earner. Both measures if properly carried out should decrease preventable illness and diminish mortality.

As a matter of fact the only logical method of carrying out the provisions of the health insurance bill is by means of health centers similar to those proposed by the Sage-Machold bill. The writer has repeatedly advocated the unit plan of treatment in the care of the sick of the community.

Physicians must recognize the limitations of private practice and realize that a practicable solution of the problem of untreated diseases must be found. Physicians, if they are to fulfill their entire duty to the community, must make every effort to acquaint themselves with health legislation and to endeavor to direct it toward the best interests of the public, aiming toward the decrease of preventable diseases and the prolongation of human life. The success of the individual physician and the progress of medical science are, in the final analysis, of importance only because they are a means to a desired end, the promotion of the common welfare.

A. C. BURNHAM, M.D.

"HEALTH CENTERS"

BAY SHORE, N. Y., June 11, 1920.

To the Editor NEW YORK STATE JOURNAL OF MEDICINE:

The article by Dr. Wadsworth in the May issue of the JOURNAL, advocating Senate bill No. 1533, proposed by the State Department of Health, is evidently intended to familiarize the profession with the provisions of the bill and to stimulate discussion, and I am prompted to make a reply.

One of the first and strongest resentments aroused in the medical practitioner by the Health Insurance bill was, that it established the relation of master and servant between the State Industrial Commission (through local fund commissioners) and the practitioner. For the relation of employer and employee is no other than that of master and servant: the one having the job to give (that the other may earn a livelihood) will dictate the terms of employment, not only as to the employee's actions while on duty, but as to the expressions at any time of his opinions. The excuse given by a Sanitary Supervisor for favoring a certain thing in his talk was, that the State Commissioner

wished it and that he was expected to and did expect to talk as his employer wished; and in another matter where as a citizen and a professional man he was asked to support a particular cause which he was understood to favor that he was afraid of unfavorable criticism by the State Commissioner, but if we would arrange to camouflage it for him he would do so.

The Sage bill is wide open to the same objection, for it confers upon the county boards of health and the board of managers appointed by the board of supervisors the powers of the master as to all employees of hospitals, clinics, laboratories, over nurses, etc.; the power to give a job, to fix the compensation, and to make rules for their control.

So if the medical practitioner has to choose between the two plans, the only difference he can see is that the bills are proposed by two different would-be masters, each seeking to add to his powers over the general practitioner.

During the vogue of the feudal system, heaven was conceived of as organized on the same plan. So it is with the employer and employee system in actual practice today: it apparently never occurs to the officials of the State Department of Health that affairs on earth or in heaven could be organized in any other way. Of no significance is it to them that under the employer and employee system there is great unrest among both brain and hand workers, not only in the United States but throughout the world: an indication that there must be something radically wrong with our theory and practice, when the result is that even physicians go on strike against the gradual encroachments of the employer (whether the State or a private individual) upon what they instinctively feel to be their rights as men and women, as they have done lately several times in Europe.

Though having eyes to see, and seeing not, yet it seems to me there are many indications abroad today as to the road to be traveled to obtain better results from the efforts of the physicians, and that it seems to me to lie in the direction in which Dr. Wadsworth instinctively turned when using the illustration of "Group Medicine" or the "Mayo Clinic."

Specialization in the different fields of practice, as well as in the investigations constantly being carried on, is a platitude which needs no comment, but the illustration of "Group Medicine" which Dr. Wadsworth gives is an unfortunate one for his argument. As he says: "experience has further shown that the best results in diagnosis and treatment can only be obtained by the co-ordinated efforts of a group of specialists working together." "Co-ordinated efforts" is the expression. To co-ordinate means to bring together those of the same class, or those having similar duties and rights. But it is not this relation of co-ordination, but a very different one that is advocated by Dr. Wadsworth.

To quote Dr. Wadsworth still further: "This association has come to be known as 'group medicine.'" "Association" is the term used here, apparently as synonymous with "co-ordinated," but for a physician to associate others with him for the accomplishment of an object is a very different matter from employing, as master, another, as servant, as in the Department's bill. If two or more individuals associate themselves as in a business, either as a partnership, association or corporation, do they consider that a person employed by them has the same duties and rights in the conduct of the business and in the division of the profits?

If the Doctor wishes to associate medical practitioners, or co-ordinate their efforts, there is but one way to do it in the ordinary as well as legal meanings of these terms, and that is to provide for medical practitioners getting together in a formally constituted organization, to elect their own officers, to determine what their compensation shall be, and make rules and regulations for their guidance. And if he wishes to asso-

ciate nurses with the practitioners the nurses should have similar duties and rights in their field.

On any other plan each member of the medical profession will find himself or herself reduced from their present high estate of being associated with the patient, family and friends, to that of the midshipman in the Navy of whom Surgeon-General Braisted spoke in his presidential address at New Orleans this year "as a person having no rights and few privileges."

Admitting that medical service in rural districts at present is "going to the dogs;" that nursing service is lacking in these same districts, and that to give the rural population even ordinary care, some form of relief is imperative; "that some plan will be absolutely necessary if industrial workers, inhabitants of rural districts, and the great proportion of people of moderate means are to have adequate medical and surgical care, which at present they do not receive, and cannot command." Is it not possible to remedy these conditions by improving the organizations of medical practitioners as they exist today?

I believe it is feasible. Let the practitioners in each school district form an association (combinations of districts where agreeable to the association and upon petition of the inhabitants), elect their own officers, make rules and regulations governing the same, and submit a budget to a meeting of the residents called annually for approval or modification: just as is done in the case of the trustees of the school district: same when approved to be included in the tax budget of the district.

Who will allege that the idea of such a tax budget would be a novelty and impracticable? Everyone knows that the physicians in any community get together and say what their fees shall be, and these are what the people have to pay and do pay. And would it not be cheaper for the citizens in a community to have all the physicians in an association, located in one building, with one general equipment for offices and means of conveyance, rather than for each physician to have his own? And who pays the greater cost of each physician having his individual equipment? Surely the citizens in the community! And each citizen would be required to pay less if the physicians were in an association, and yet the practitioners would have the same or even a greater net return than now.

I am convinced that people generally will never avail themselves of the special knowledge in the possession of the physician to its fullest extent until there is no direct charge for any particular information desired. According to the budget tax proposed, there would be no need to discriminate between those able to pay the full cost, those able to pay part of the cost, and those able to pay none: a constant source of expense to investigate and annoyance and ill-feeling to all concerned. Each individual would have the right to seek advice and counsel in their need when they had performed the corresponding and equivalent duty of contributing to the budget. For it is true, that though the sum raised by the budget tax would be levied against the proprietors, yet the proprietor would shift the burden to the possessor: i. e., to the occupant of the land or the house or the consumer of the manifold forms of produce. So that no one would escape paying a share toward the tax budget eventually, even though some individuals would never see the tax collector.

Doctor Wadsworth enumerates the blessings to flow to the public and the practitioner under sixteen different heads; to review them in detail would require too much valuable space in your journal, so I will follow the adage, "brevity is the soul of wit."

Would it not be a still greater blessing to make medical services available to all citizens at a minimum cost and to all practitioners at a maximum compensation, rather than to single out only those hindmost ones whom the devil has in his grip?

What a greater blessing it would be to the practitioner in an association to be able to call upon the specialist of his choice in another association, without the present handicap of the matter of direct expense to the patient! But as defective as are our present methods, woe unto the man who has the audacity to ask us to give up even that, in favor of some one designated by a third party.

What a greater blessing it would be if the establishment of clinics, laboratories, hospitals, etc., were left to the judgment of the practitioner and to be under the direction of his association, and can you imagine the joy of consigning the boards of supervisors, the State Civil Service Commission and any other commission, to—well, the place where the employee system was invented?

What a greater blessing it would be for the practitioner and the nurse to enter the home to demonstrate developing defects and their causes and appropriate remedies in innocent babes and children without regard as to whether the parents are able to pay.

What a greater blessing it would be for the young practitioner to do the rural and industrial work as a member of an association loyally supporting him, even as when an intern, rather than to be thrown upon his own resources and to meet the competition of wiser and abler men!

What a greater blessing it would be to be rid of the master to any physician, whom the employee must satisfy if he would get and keep his job, even if he neglects his duties to the citizens generally and thereby gets himself hounded by the volunteer health activities that spring up over night!

ALFRED DIETRICH, M.D.

"CRITICISM"

NEW YORK, N. Y.,

To the Editor of the NEW YORK STATE JOURNAL OF MEDICINE,

Dear Doctor,

Taking advantage of your kind invitation extended to readers of the Journal to use the columnson on subjects of interest to the Medical profession, Let me ask you this question?

In a free country with free speech and free press should any Physician be compelled to subscribe to a Journal that he never opens and has no more use for than the very germs that destroys the life of his patient I refer to the Journal of the American Medical Association,

In a short space of time I can place my finger ou at least two hundred physicians who throw it into the waste basket as they receiveit,

Why? The simplest questions are never answered every letter is ignored subscribers are treated worse than a lot of cattle,

The Park Row newspapers in their palmiest days never contained rottener ads, No matter what your status is if you havent the rank of a Captain or Major your article is consigned to the waste basket How much longer will the medical profession have to stand for such practices, and abuses,

The sooner this matter is looked into the better it will be for all concerned for eventually if allowed to go on it will show its destructive effects,

A Victim,

JACOB WEISS M.D.

Original Articles.

THE ANTISCORBUTIC VITAMINE.*

By ALFRED F. HESS, M.D.,

NEW YORK CITY.

IN the days of long voyages on sailing vessels scurvy constituted one of the greatest of plagues and was the cause of the failure of many explorations, of the defeat of navies, of the loss of thousands of sailors in the mercantile marine, of the foundering of promising Arctic explorations. It may be thought by many that now that this phase is past, scurvy possesses merely historic interest. Such is far from the case. In the World War, although scurvy did not play the same rôle as in the wars of the seventeenth and eighteenth centuries, it figured prominently in the mortality and more particularly in the morbidity statistics of many of the armies. This will be appreciated when we read that in Mesopotamia during the last six months of the year 1916, over 11,000 cases of scurvy occurred among the British Colonial troops¹; that commissions were sent by Germany to investigate and mitigate the scurvy among the prisoners in Russia and in Bulgaria^{2,3}; that a physician in charge of one of the Red Cross stations reports the occurrence of over a thousand cases.⁴ On the other hand, scurvy occurred to only a mild extent along the western front, and the American Army, due to its liberal ration and the short period that it was in the field, was practically exempt from its inroads.

We must not, however, expect to find scurvy in the guise which it appeared in the Middle Ages, but rather in a latent or rudimentary form, which is at the same time the most common type and the one most difficult to recognize. This mild nutritional disorder gains importance from the fact that it increases the susceptibility to infection and intensifies the course of other diseases. An individual suffering from latent scurvy will, for example, readily develop pneumonia and rapidly succumb to it; wounds will be sluggish and heal with difficulty; eruptions occurring in the course of other diseases, such as typhoid fever and cerebro-spinal fever, will assume a purpuric character, as noted by the army surgeons in our Civil War and in the course of the World War.

In times of peace it might be thought that scurvy would not occur. It is my belief, however, that mild forms are not infrequent in the early spring, and that they pass unrecognized, to be cured spontaneously and unwittingly with the advent of the fresh vegetables of the early sum-

mer. This disorder no doubt occurs from time to time among the sick, especially those suffering from gastro-intestinal diseases and fevers, whose diet is restricted either on the advice of the physician or through some whim of their own. I do not refer to a disorder distinguished by the well-known signs and symptoms typical of scurvy, but a mild nutritional disorder of the tissues that must necessarily develop when they are deprived for a considerable period of the essential antiscorbutic vitamine. This nutritional state is most common among infants—among the large group of the artificially fed, who, even when nourished according to accepted standards, do not receive an excess of this dietary factor.

We know very little about the antiscorbutic vitamine, but more than we do concerning the fat-soluble vitamine, and fully as much as about the water-soluble vitamine. The antiscorbutic dietary factor is also water-soluble. It is soluble in both water and in alcohol. It is the least resistant of the three vitamins to heat, to drying and to alkalization; the length of time it is subjected to these deleterious processes seeming to be of greater importance than their intensity. For example, a high degree of heat, the raising of a foodstuff to the boiling point, will not destroy its antiscorbutic content to the same extent as a lower degree of heat maintained for a longer period. Acids have the peculiar property of protecting this vitamine, enabling substances such as orange juice, lemon juice or tomato to withstand conditions which would be destructive to foodstuffs of neutral or alkaline reaction.

Our knowledge of the function of the vitamins or of their action in the intermediary metabolism is meagre. We cannot answer the important question as to whether they act directly on the tissues or whether they functionate indirectly through the endocrine glands or other mechanism. The antiscorbutic factor, judging by animal experiments, does not seem to be stored in the body to any considerable extent. We seem to lead a hand-to-mouth existence in regard to the vitamins, depending largely on what we have consumed in the food a short time previously. For example, in regard to the antiscorbutic vitamine, if we take two sets of guinea-pigs and feed one with 6 c.c. per capita of orange juice for a period of two weeks, and the other with only 3 c.c. per capita, which may be regarded as "the minimal protective dose"—when these two groups are placed on a diet leading to scurvy we shall find that both will show signs and die of scurvy after about the same lapse of time. In other words, those animals which throughout the preliminary period received a twofold "minimal protective dose" were unable to avail themselves of the excess of the antiscorbutic vitamine.

Almost all the cells of the body seem to require the antiscorbutic vitamine, but not to an equal extent. One of its important functions is to

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

safeguard the integrity of the endothelial lining of the blood vessels, and, on the other hand, one of the most characteristic signs of its deficiency is the hemorrhagic tendency or diathesis. This is due, not to any significant decrease in the coagulability of the blood, but to a faulty nutrition of the vascular endothelial cells, or of the cement substance which binds them together. This can be well illustrated in some cases by the "capillary resistance test." Not infrequently if we apply a tourniquet to the arm for about three minutes in a case of scurvy, petechial spots will appear in large numbers on the forearm, showing that the blood vessels have not been able to withstand the increased pressure. If the scorbutic patient is given antiscorbutic foodstuffs, within a week or two the same test frequently gives a negative result. In other words, the lining of the blood vessels has been strengthened and repaired by supplying the deficient vitamine. Some cells seem to be able to perform their highly specialized function in spite of the lack of antiscorbutic factor in the diet. For example, the cells of the body which elaborate diphtheria antitoxin seem little influenced by the altered nutritional condition, and to be able to manufacture protective amounts of the specific immune substance in spite of the scurvy. I have frequently tested scorbutic infants by means of the Schick reaction, and found them to be immune, showing that their blood contained an adequate amount of antitoxin.

I shall not consider the various foodstuffs in regard to their vitamine content. It is well known to all, that the chief sources of antiscorbutic vitamine are the fruits and the vegetables, and that they differ in potency in this respect. It may be added that they differ not only one from the other, but that they do not possess stable and constant antiscorbutic content. For example, it is erroneous to consider a vegetable such as carrots as possessing a definite amount of vitamine. Old carrots possess less of this factor than young carrots, and those which have been plucked for a long time, less than those which have been freshly gathered. This fact has to be considered in rationing antiscorbutic foodstuffs, either to individuals or to large bodies of men.

As previously mentioned, the antiscorbutic vitamine is peculiarly sensitive to drying, but under favorable conditions foodstuffs may retain this factor in spite of desiccation. Cabbage and tomatoes have been dried successfully in the laboratory by Givens and Cohen⁵ and by Givens and McClugage.⁶ But it should be thoroughly understood that commercially dehydrated vegetables, as prepared at present, are practically devoid of antiscorbutic value.

It is important that there should not be a sweeping denunciation of all dried foodstuffs. Milk can be dried and retain a very large part

of its antiscorbutic vitamine, provided certain conditions are observed. In the first place, the milk must be rich in antiscorbutic vitamine before it is desiccated; second, it must be dried quickly, then it should be packed within the shortest possible interval; and, finally, the containers should be air tight, preferably hermetically sealed. Recently I fed a scorbutic baby with milk which had been dried by the so-called Just-Hat-maker process—whereby it is subjected for a few seconds to about 230° F.—with the result that the hemorrhages of the gums began to be absorbed within three days and all symptoms to disappear shortly thereafter. This infant received dried milk to the equivalent of twenty-four ounces of fresh milk, and this preparation had been dried somewhat over three months before we made use of it. Not long ago Dr. Unger and myself, after curing a baby of scurvy by means of dried milk, maintained it in health for a subsequent period of three months on a diet which contained no additional source of antiscorbutic vitamine. I emphasize this point partly because it illustrates the peculiar relation of drying to the antiscorbutic vitamine, and because the workers at the Lister Institute, recently Barnes and Hume, have published reports to the effect that dried milk has lost its antiscorbutic property.

Foodstuffs in general lose their antiscorbutic quality in the course of canning. In this regard, as in connection with dehydrating, the statements have been too sweeping. Under certain conditions the antiscorbutic factor may remain almost unimpaired. For example, tomatoes can be canned, in the course of which they are subjected to a twofold heating, and nevertheless remain one of the most potent antiscorbutic foods. This is due to their acid reaction, which protects them against both the heating and the subsequent aging. The fact that they are hermetically sealed also is an important factor. The effect of oxidation in diminishing the antiscorbutic factor is well illustrated when we store orange juice in the refrigerator in a vessel from which the air is not excluded. Within the course of a month its vitamine content is considerably diminished, and the deterioration proceeds as time elapses.

From a practical point of view it may be stated that canned tomato is the most serviceable antiscorbutic for artificially fed infants. It is well borne, comparatively inexpensive, and is available. As they have been shown by Osborne and Mendel to be rich in the water-soluble and the fat-soluble vitamins, *canned tomatoes may be regarded, from a nutritional standpoint, as a palatable solution of the three vitamins.* We have made use of this antiscorbutic for the past two years in feeding a large number of babies in the infant asylum with which I am connected, and can recommend it unreservedly in doses of one ounce a day. By substituting it for orange juice a great saving has resulted to the institution.⁸

There is no foodstuff which from a practical point of view it is more important to understand than milk. Without going into detail, it may be stated that raising milk, even to the low degree of heat of pasteurization, destroys some of its antiscorbutic factor, and that if aging be added subsequent to this pasteurizing process—as is usually the case—the milk becomes still poorer in this quality.

As is well known, babies who are nursed rarely develop scurvy. This, however, should not be interpreted as indicating that human milk is particularly rich in antiscorbutic vitamine, but that the infant obtains a daily supply of this factor from birth. It is impossible to state with accuracy how much human milk a baby must receive to protect it fully from or to cure it of scurvy. In one instance eight ounces a day were found to be insufficient and twelve ounces barely enough to alleviate the signs and symptoms. Elsewhere we have shown that sixteen ounces of cow's milk suffices for the cure of infantile scurvy, so that it is evident that human milk and cow's milk do not differ largely in this particular. It may be added that the human milk in question was that of a woman on a liberal diet which contained an adequate amount of vegetables.

It is generally considered that there is a direct relation between the intake of antiscorbutic vitamine and the amount contained in the milk of an animal. In other words, that the animal cannot manufacture vitamine, and if its food is markedly deficient in antiscorbutic vitamine, may produce a milk which is practically vitamine free. This has never been confirmed by experiment. I should like to point out in this connection, however, that in Russia, in the country where scurvy is endemic and occurs to the greatest degree, infantile scurvy has been most rarely reported. For example, in connection with the great scurvy epidemic in Russia (1898-99) Tschudakoff personally examined over 10,000 persons and found 11.11 per cent; of the people sick with this disease. He stated that in the course of this large experience he did not meet with a single case under the age of five years. Fuerst writes that Filatow, the great Russian children's specialist, declared that he knew of no case of Barlow's Disease described in the Russian literature. This is not literally correct, as Doepp described an epidemic of scurvy in the St. Petersburg Foundling Asylum occurring in 1831. It serves to emphasize, however, the paucity of cases among infants in this great land of endemic adult scurvy. Lyabmow,⁹ in referring to the scurvy in Kazan, tells us that among 28,000 cases only a few infants were affected, and Rauchfuss made the statement at the International Congress at Copenhagen in 1884 that, although he had seen a great many cases of scurvy, he had never seen it in children one to two years of age.¹⁰ It is difficult to understand this paradoxical situation, unless we con-

clude that the mother relinquishes antiscorbutic vitamine from her tissues, or that the lack of vitamine in the milk is compensated for by the large quantity consumed, or that its freshness endows it with additional potency. A comparison with beriberi in regard to the effect of breast feeding is most striking. Infants which develop beriberi are almost always nursed and not bottle fed, and show signs of this disorder while the mother is in apparent health, merely in a state of latent beriberi. This contrasting picture shows that there are essential differences between the pathogenesis of these two diseases, which are supposed to depend solely on a deficiency of their respective vitamins.

In closing, I wish to add a few words concerning the frequency of infantile scurvy in its latent and subacute forms. Under the most favorable conditions artificially fed infants obtain just about enough antiscorbutic vitamine to maintain a balance during the first months of life. They require about sixteen ounces of fresh cow's milk to furnish this quota, and they rarely receive more. If this milk is pasteurized, as it is in the larger cities, additional vitamine must be furnished by means of other food. As a matter of fact, few physicians give an antiscorbutic supplement until a baby is over three months of age, and therefore a large number of infants under this age must undergo what may be called "a negative balance of this vitamine." They show no signs of scurvy, because it takes six months or more for these signs to become manifest on a diet of pasteurized milk; nevertheless, their cells must be poorly nourished in regard to this important dietary factor. This deficiency will not lead to scurvy, but, as pointed out elsewhere,¹¹ it may render them more subject to infection and less able to combat "grippe" and other infectious diseases. If we include this large group in our estimation, then we must consider infantile scurvy as widespread in our larger cities.

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THE FAT-SOLUBLE VITAMINE.*

By LAFAYETTE B. MENDEL, Ph.D.,

Yale University, New Haven, Conn.

IN his classic monograph on nutrition, published in 1881, the eminent Munich physiologist, Carl Voit, discussing an ideal plan for the study of the subject, wrote:

"Unquestionably it would be best for the purpose if one could feed only pure chemical compounds (the pure foodstuffs)—for example, pure protein, fat, sugar, starch, ash constituents, or mixtures of the same. However, inasmuch as men and also animals only rarely tolerate continuously such tasteless mixtures, it is necessary in most cases to choose foods as they are provided by nature. Nevertheless, it would probably be possible and very desirable to repeat with the pure substances the trials with the natural food products, although the results yielded thereby might not be essentially different."

The attempts to nourish animals on diets of isolated known foodstuffs—on mixtures of protein, fat, carbohydrate, inorganic salts and water—have invariably ended sooner or later in failure. The most striking manifestation of such experiments is the refusal of the animals to eat these so-called synthetic rations in adequate amounts. Efforts to treat the anorexia as a phenomenon of monotony of diet by altering the character of the food mixtures and by other devices intended to encourage appetite for the simple rations have usually likewise met with failure.

Singularly prophetic was an utterance of Professor Hopkins,¹ of the University of Cambridge, fourteen years ago. He wrote:

"But, further, no animal can live upon a mixture of pure protein, fat, and carbohydrate, and even when the necessary inorganic material is carefully supplied the animal still cannot flourish. The animal body is adjusted to live either upon plant tissues or the tissues of other animals, and these contain countless substances other than the proteins, carbohydrates, and fats.

"Physiological evolution, I believe, has made some of these well-nigh as essential as are the basal constituents of diet. Lecithin, for instance, has been repeatedly shown to have a marked influence upon nutrition, and this just happens to

be something already familiar and a substance that happens to have been tried. The field is almost unexplored; only it is certain that there are many minor factors in all diets of which the body takes account.

"In diseases such as rickets, and particularly in scurvy, we have had for long years knowledge of a dietetic factor; but, though we know how to benefit these conditions empirically, the real errors in the diet are to this day quite obscure. They are, however, certainly of the kind which comprises these minimal qualitative factors that I am considering.

"Scurvy and rickets are conditions so severe that they force themselves upon our attention; but many other nutritive errors affect the health of individuals to a degree most important to themselves, and some of them depend upon unsuspected dietetic factors.

"I can do no more than hint at these matters, but I can assert that later developments of the science of dietetics will deal with factors highly complex and at present unknown."²

How amply Hopkins' prophecy has been justified everyone who reads the current literature on nutrition will appreciate. The hypothesis of the indispensability of certain accessory food factors in the diet—of the need of "hitherto unidentified essentials" in any ration which is to be physiologically complete—has derived an abundance of experimental support from the now numerous investigations on this subject. Despite criticisms of diverse sorts, the word "vitamine" has gained current preference as a designation for the newly accepted food factors.

The broad outlines of the vitamine hypothesis have already become familiar to medical audiences. I can heartily recommend the recently published special report of the committee appointed by the Lister Institute and the Medical Research Committee in England, under the National Health Insurance,³ as a readable, carefully compiled survey of the present state of knowledge concerning vitamines. The established facts and the theories to which they have given rise have been derived in part from purely experimental tests upon animals and in part from careful observations in the field of human pathology.

In order to avoid the confusion of ideas which prevails at present in much of the popular discussion of the rôle of vitamines, certain salient features need to be clearly appreciated. It is

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almost assured that more than one accessory factor or vitamine is concerned in various phases of nutritive well-being. Dietaries in which one of the unidentified principles is missing may become responsible for so-called deficiency diseases. Scurvy is probably the best known of these, and its prevention or cure seems to be dependent upon the supply of a vitamine (antiscorbutic vitamine) not necessarily or even probably identical with the food factor involved in the treatment of beriberi. The latter and its analogue, experimental polyneuritis in animals, have furnished some of the most cogent evidence for the validity of the vitamine hypothesis. Surprisingly small quantities of products like extracts of yeast and various natural foods—products not ordinarily characterized as sources of the familiar nutrients—will avert the peculiar symptoms that ensue as a consequence of an otherwise adequate (vitamine-free) diet. The curative or protective factor in them has been termed antineuritic or antiberiberi vitamine. Indeed, there is considerable evidence that the antineuritic and antiscorbutic properties of foods are distinct and perhaps separable. Yeast, for example, is antineuritic but evidently not antiscorbutic.

When an animal fails to thrive on a mixture of the familiar foodstuffs, sufficient in protein, etc., and adequate in calorific value, the supply of a small amount of variety of products prepared from natural foods will bring about successful nutrition on the very diets which, without the added product, were attended with failure. Flavor is not the factor here involved; it is something far more subtle. The picture of transformation of an animal through the daily administration of a small amount of a great diversity of natural products, the diet being otherwise qualitatively unaltered, impresses the observer as nothing less than marvelous. The essential factor of vitamine here concerned has sometimes been designated water-soluble B and usually regarded as identical with the antineuritic vitamine. The identity has largely been supported by parallelisms and analogies. The proof has yet to be established.⁴

My own function in this symposium is to discuss a further, and still less well understood, factor concerned with growth, the fat-soluble vitamine (Fat-soluble A, also lately termed the antirachitic factor). It had been observed that when young rats were fed upon artificial mixtures containing protein, carbohydrate, lard, and suitable mixtures of inorganic salts, along with some source of that adjuvant which was subsequently designated as water-soluble vitamine (antineuritic vitamine, or water-soluble B) they might grow for a time or at least be maintained. Sooner or later, however, nutritive decline ensued, often attended with characteristic symptoms of eye disease, to which I shall presently refer again. This decline could be arrested in most cases if butter or the ether soluble fraction of butter, or

eggs were supplied. This discovery was reported in 1913 by McCollum and Davis and almost simultaneously by Osborne and Mendel. Somewhat earlier Stepp⁵ had noted in experiments on mice that prolonged extraction of their food with alcohol and ether removed some essential component which he found to be present in both milk and egg yolk. Stepp was unable to identify the removed indispensable component as one of the familiar lipoids, yet he remarked: "It is not impossible that unknown substances indispensable for life go into solution with the lipoids, and that the latter thereby become what may be termed carriers for these substances."

It was soon demonstrated that when butter fat was present along with an otherwise suitable food mixture in the ration from an early period of growth the nutritive failure did not ensue. Not all fats supply the essential factor now termed fat-soluble vitamine or fat-soluble A. For example, it is missed in ordinary lard, cocoanut, linseed, almond and olive oil, but present in some oleo fats and in general in fats extracted from cellular tissues. Thus the oil from the liver and kidneys contain it—notably cod-liver and other fish liver oils. It may be present in margarines prepared from animal fats, other than lard, in proportion to the quality and percentage of those fats; absent in margarines prepared from vegetable fats. To present a catalogue of the known distribution of the fat-soluble vitamins here would lead to no purpose. Broadly speaking, it may be said that this food factor has been found present in many fats and oils derived from animal tissues, but missing in the purified commercial oils from plant products. More recently, however, the fat-soluble vitamine had been found widely distributed in the green parts of plants and in a variety of roots and tubers, none of which are ordinarily regarded as sources of fats or oils in the ordinary sense. Osborne and I have recently demonstrated that in some of these cases the oily residues obtained from dried green leaves like spinach and alfalfa by extraction with U. S. P. ether are comparatively rich in the fat-soluble vitamine.⁶

Some recent writers have gone so far as to assert that the animal organism does not possess the power to synthesize the vitamins. The still scanty evidence for this contention is far from convincing; but if it shall be verified, the significant rôle of plants as the primary source of the vitamins will be emphasized in a striking way.

The symptoms presented by such animals as have been studied carefully with reference to deprivation of an adequate amount of the fat-soluble vitamine include, foremost, a decline in body weight accompanying inadequate food intake. Sometimes the earliest manifestations are restricted to a retardation in the usual rate of growth, in the case of adolescent individuals, without any other conspicuous symptom. This

slowing up in the developmental changes may continue for some time until the more striking complete cessation of growth and actual loss in weight are exhibited. Sometimes the onset of the latter is rather sudden, so that the rapid nutritive decline resembles the collapse occasionally described in the case of malnutrition in children. Long before the appearance of these more severe symptoms, which invariably have a fatal outcome unless dietary changes are instituted, the eyes are likely to exhibit pathological changes, the precise nature of which is still under investigation. This phenomenon was long ago described in the case of rats by Knapp,⁷ who was studying these animals under dietary conditions that would now be interpreted as representing a lack of fat-soluble vitamine. Osborne and Mendel specifically called attention in 1913 to the prevalence of the eye disease in rats upon diets devoid of fat-soluble vitamine. The more obvious pathological manifestations consist, in the early stages, in a slight exudate, sometimes slightly blood-stained, at the edges of the eyelids. Subsequently the corneal covering may exhibit a xerophthalmia—a name by which the disease has recently been designated by several investigators. Freise, Goldschmidt and Frank⁸ have described under the name keratomalacia what is evidently the same abnormality, in the following words:

"At approximately the time of the decline in weight, perhaps in the third week, the first eye symptoms manifest themselves: shedding of the eyelashes without general loss of hair. This is followed in the third to fourth week by a striking enophthalmus, and in the fifth or sixth week by a visible affection of the cornea: dryness, rapidly ensuing turbidity, and ulcerating decomposition without any marked inflammatory appearances. The two eyes of the same animal are frequently attacked with unlike severity; the ulceration invariably sets in, however, unless the animals previously succumb. Spontaneous healing or improvement never occurs."

To what extent bacterial invasion is the dominant factor in this characteristic disease of the eyes remains to be determined. That the unfavorable nutritive condition of young animals deprived of the fat-soluble vitamine is a dominating factor in the genesis of the symptoms seems undoubted. Out of several thousand rats kept under essentially similar hygienic conditions in adjacent cages in the same room we have never encountered a single case of this eye disease in an animal not deprived of a source of fat-soluble vitamine. This has been true despite the fact that many of the experimental animals have been in highly unfavorable nutritive condition owing to a variety of other dietary deficiencies, so that they might have been assumed

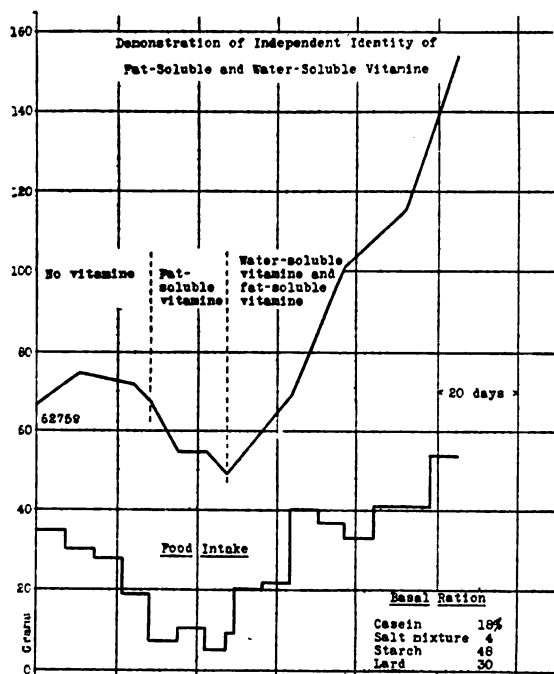
to be peculiarly susceptible to any current bacterial infection. In thus relating the keratomalacia or xerophthalmia to the lack of the vitamine factor it must not be assumed that microorganisms play no part in the pathology of the disease. Professor Winternitz of the Yale School of Medicine is at present engaged in an elaborate study of the pathological manifestations referred to.

A further abnormality which has frequently been observed at autopsies in the case of animals which have been deprived of fat-soluble vitamine is the presence of calculi of calcium phosphate deposited in various parts of the urinary tract. In a report of 81 cases of calculi which we have discovered in 857 necropsies it was stated:

"Thirty-five (43 per cent) of the rats had never received butter fat or any other source of the fat-soluble vitamine in their rations. Of the remaining forty-six cases, none of the animals had received food known to furnish such a vitamine during the entire course of the experiment; and only thirteen had this substance during more than one-half of the period in which they were on an experimental diet. . . . In other words, in every instance where calculi developed, the animals were without an adequate source of the fat-soluble vitamine for some time."⁹

Since then we have added to the number of records of such calculi in animals that have died on diets deficient in fat-soluble vitamine. The incidence of these calculi is probably far more common than these statistics represent, because in many cases decline and death of the animals have been averted by change of diet, so that in the absence of necroscopic examination no evidence regarding the possibility of such abnormalities in the urinary tract has been brought to light. When it is recalled that phosphatic calculi deposited in a neutral or alkaline urine, which in turn frequently owes its reaction to bacterial decomposition, are found extensively among peoples living, for example, in the tropics and the Far East, on diets quite unlike the mixed régime of most Americans and Europeans, the possible relation of the calculi to dietary factors is at once prominently suggested.

More recently the possible rôle of the fat-soluble vitamine as an antirachitic agency has been brought into prominence, particularly because of the investigations by Mellanby¹⁰ on puppies. Although the experimental basis for these deductions still seems to me to be far from convincing, the hypothesis deserves careful consideration, owing to the prominence which has been given to it by the English Committee for the Study of Accessory Food Factors. Hess¹¹ has lately debated the validity of Mellanby's claims and may be expected to discuss this subject further in the course of the present symposium.



All of the phenomena of animal disorders discussed in connection with the experimentally observed effects of lack of fat-soluble vitamine in the diet—nutritive collapse, eye disease, urinary calculi, and perhaps rickets—have their analogues in human pathology. Some of these now deserve careful consideration in the light of the knowledge which the recent studies in animal nutrition have afforded.

There is an abundance of evidence that the water-soluble vitamine (water-soluble B) is needed throughout life. Whether they be young or old, animals deprived of this food factor soon give evidence of the deficiency. In the case of fat-soluble vitamine, however, the evidence thus far available indicates that the need of it may be greater during the earlier, adolescent periods of life than at subsequent adult age when the increments of body weight are no longer conspicuous or are completely lacking. The data which Osborne and I have collected bearing upon this topic will soon be published. It is too early to say that the adult animal has no need whatever of the fat-soluble vitamine; in any event, however, it has become clear from our experiments as well as observations by other investigators that full-grown rats may be kept in good health for very long periods of time on diets containing fat-soluble vitamine in an amount which does not suffice at an earlier age attended with rapid growth. The quantitative bearings of the fat-soluble vitamine on the nutrition of pregnancy and lactation also remain to be cleared up.

So long as the chemical identity of the fat-soluble vitamine is not known it is impossible to speak of its quantitative relationships in absolute terms. Inasmuch as butter fat has most fre-

quently been employed as the source of this food factor, comparisons can most advantageously be made in terms of this food. Recently Osborne and I have demonstrated that about 0.1 gram butter fat fed daily in addition to an otherwise adequate diet suffices to enable rats to reach adult size before they show symptoms of nutritive decline that are remediable by further increments in this supply of fat-soluble vitamine. With about 0.1 gram of dried spinach or alfalfa the feeding results were even more favorable, incipient decline being averted until a later period. It will be recalled that we have succeeded in extracting a potent oil from each of these green plants. Even more striking have been the results with dried tomato which served, in daily doses of approximately 0.1 gram, as the source of fat-soluble vitamine in a period of 14 months within which the animals rapidly grew to large adult size. These illustrations suffice to indicate the relative richness of some of the edible vegetable products in fat-soluble vitamine.

Steenbock has recently championed the view that the fat-soluble vitamine may be closely associated with or related to certain yellow pigments. It is not carotin. In a recent publication he says:

"As our data on the distribution of this dietary essential accumulated we were impressed with the fact that there appeared to be a remarkable coincidence in the occurrence of yellow plant pigments and resultant success in nutrition when all other requirements outside of the fat-soluble vitamine were known to be satisfied. For instance, both the carrot and sweet potato which are highly impregnated with yellow pigment were found to supplement successfully rations known to be deficient in this vitamine. Other roots not so pigmented were found impotent. Butter rich in pigment is very efficient, and similarly oleo oils containing the pigment show a considerable fat-soluble vitamine content. Taking another example, we have in the case of the leafy parts of plants both the growth-promoting property and the appearance of yellow plant pigments associated, though here the yellow pigments are masked by the chlorophyll. At the present time such correlations have been made by us and shall later be presented in their proper connections. Suffice it to say that since these general premises have apparently justified abstract inferences in regard to the probable occurrence or absence of the fat-soluble vitamine on the color basis, it appeared probable that such correlations might be extended to that of the white and yellow maize kernels."¹²

According to Steenbock, furthermore: "the occurrence of yellow pigment and the growth-promoting property attributed to the presence of the fat-soluble vitamine seem to be intimately associated in the maize kernel."

Many of our own observations might be interpreted in harmony with the view here set forth.

Thus we have found marked differences, estimated per gram of dry solids, between the potency of the white potato and the white cabbage on the one hand and the color-bearing carrots and spinach, alfalfa and grass on the other hand. It should be noted, however, that other investigators have questioned the validity of this hypothesis.

The question of the stability of the fat-soluble vitamine in such edible products as ordinarily contain it has likewise been the subject of debate. Several years ago Osborne and I¹³ demonstrated that "butter fat through which live steam was passed for 2½ hours or longer did not lose its characteristic restorative properties," when fed to rats which had declined on diets deficient in fat-soluble vitamine. Other investigators, notably Steenbock¹⁴ and Drummond¹⁵, have reached the conclusion that the fat-soluble vitamine is readily destroyed by heat. We are not yet prepared to say that heat is entirely without effect upon the fat-soluble vitamine. Nevertheless, in recent repeated experiments we have found that even small quantities (¼ gram or less per day) of butter fat heated for many hours at 96° are still decidedly potent as a source of fat-soluble vitamine. The differences of opinion regarding the thermolability of this factor still need to be reconciled. Inasmuch as we have found that the vitamine in the "butter oil," an active fraction of butter fat, is apparently far less stable than in its original fat environment, it may be that the substances in connection with which the vitamine is ordinarily obtained may act as protectives against heat under certain conditions. Steenbock has recently admitted the greater thermostability of the fat-soluble vitamine as it is found in plant products¹⁶—a conclusion in harmony with our own experience. In view of the widespread dietary use of artificially hardened fats, it should be noted that in the hydrogenation of oils, for example the potent whale oil, the fat-soluble vitamine is destroyed,¹⁵ hence the artificially hardened cooking fats cannot be expected to furnish fat-soluble vitamine.

With respect to the rôle of the various vitamins in nutrition the numerous investigations recorded in recent years already furnish certain information of practical value. Admitting the individuality of at least three types of vitamins already referred to in this paper, it appears that the antiscorbutic potency of many foods is more susceptible of deterioration by heat and perhaps other artificial conservation processes than are the other vitamins. It has been demonstrated conclusively, for example, that heat applied in the desiccation or sterilization of food—even the temperature at which milk is pasteurized—may destroy the antiscorbutic vitamine. Unfortunately this fact, well-substantiated in the case of certain food products, has been subjected in the popular literature on vitamins to broad generalization

with respect to all types of foods. It is known, however, that tomatoes and orange juice, for example, are far more thermostable than some of the current statements would lead the untrained reader to assume.¹⁷ In fact, precisely what factor is responsible for the diminution of antiscorbutic power in the heating or drying of foods remains to be elucidated. It is not unlikely that other factors than heat,—for example, oxidative changes,—are the determining incidents in the loss of this vitamine. In contrast with the antiscorbutic vitamine, both the fat-soluble and the nutrition-promoting water-soluble vitamine show greater stability toward heat and desiccation.

The wide distribution of water-soluble vitamine in diverse structures of many types of plant and animal tissues which serve as foods for man and the domestic animals seems to render the possibility of a deficiency in this category of vitamine less likely than is the case with the fat-soluble vitamine. Accordingly, from the practical standpoint, there is perhaps greater likelihood of pathological results arising from shortage of the fat-soluble vitamine than of the others in everyday life. The demonstration of its wide-spread occurrence in some of the plants appears to be a fortunate circumstance in view of the fact that the hitherto best-known abundant sources of fat-soluble vitamine—milk fat and egg fat—are frequently not readily available to large classes of population. Recent investigations by Hindhede¹⁸ have suggested that the success of the Danish people in nourishing themselves during the later periods of the World War on diets exceedingly poor in fat, or furnishing at best lard and other fat products deficient in fat-soluble vitamine, was due in some measure to the abundant intake of plant foods supplying the missing factor. It may be, furthermore, that the quantitative need of this in the case of adults has been somewhat exaggerated, because our impressions of its importance have been gained so largely through the study of the greater demand for fat-soluble vitamine by growing individuals. Further bearings of this must be left to my colleagues in this symposium for discussion.

It needs to be clearly emphasized to most audiences that the so-called vitamins have not yet been isolated; nor has much light been thrown upon their chemical nature. Up to the present time at best little more than the solubilities and possible methods of partial concentration have been reported. In view of this fact physicians and others interested in practical dietetics should beware of false or exaggerated statements regarding the superior potency of proprietary preparations or nostrums which may lay claim to unusual merit as sources of vitamine. At the present time it still seems most rational to depend upon the demonstrated sources of the vitamins as they occur in our natural food products.

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THE WATER-SOLUBLE VITAMINE.*

By THOMAS B. OSBORNE, Ph.D.,

Connecticut Agricultural Experiment Station, New Haven, Conn.

THE water-soluble vitamine, also called the antineuritic vitamine or water-soluble B, is now assumed to be an indispensable constituent of the diet of all animals, although as yet experimental proof of this has been obtained for only a few species. The effects of diets free from this vitamine on certain species and their responses to subsequent additions of it to their foods have convinced investigators that the water-soluble vitamine is equally essential for all other animals, but no records exist which are equally convincing for man.

That mankind must have an adequate supply

of this vitamine was first indicated by the studies of beriberi, and as the entire vitamine question originated in these investigations, it seems to have been tacitly assumed that all that has been learned by experiments with animals is likewise applicable to man.

Some cases have been reported in which infants have made more or less pronounced responses to increases in this vitamine in their diet, but at the most experience along these lines is small.¹

In the past, the *deficiency* features of foods poor in vitamins and their effects on man and animals have chiefly interested investigators. Too little attention has been given to the converse of this problem; namely, the *effect* produced by the water-soluble vitamine when given to animals suffering from a previous deficiency of this factor. We have little knowledge concerning the part played by the water-soluble vitamine in the physiology of the animal.

Albino rats which have declined for lack of the water-soluble vitamine respond so markedly when this is administered to them as to impress us with the extraordinary influence it exerts on their metabolism. It is this feature of our problem to which I wish to direct your attention, because it seems to me to present especial interest to the clinician. For the sake of practical convenience, I shall speak of stimulation of metabolism and planes of metabolism, although in doing so, I may not strictly conform to the custom of physiologists who deal with the energy problems of nutrition, and I do this with full recognition of our total lack of the knowledge which the calorimeter must ultimately contribute.

I assume that under ordinary circumstances food intake can be considered to be an approximate measure of the extent of an animal's metabolism, since the food which is utilized is a tolerably uniform proportion of that ingested. For my purpose food intake measures metabolism and it makes no difference whether the energy of the food is transformed into heat, work, or into potential energy of new tissues.

Under natural conditions normal animals, including man, adapt their consumption of food to their need for calories. It is plain that the amount of any ingredient forming a fixed proportion of their diet will be eaten in great or less amount according as the caloric requirement is high or low. Under such circumstances food intake determines vitamine intake.

Hundreds of experiments have demonstrated that if the animal is to thrive it must receive daily a certain minimal amount of the water-soluble vitamine. Long-continued maintenance in a state of general debility follows the continued ingestion of food containing too little of this vitamine. This is always accompanied by a low food intake, in other words, by a poor appetite. Under such conditions if the vitamine

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intake is increased, appetite at once returns, and unless during the period of debility the animal has contracted some infectious disease, or suffered some permanent organic change, it is rapidly restored to health and vigor. The enormous increase in food intake which accompanies this recovery I can interpret only as due to a stimulation of metabolism.

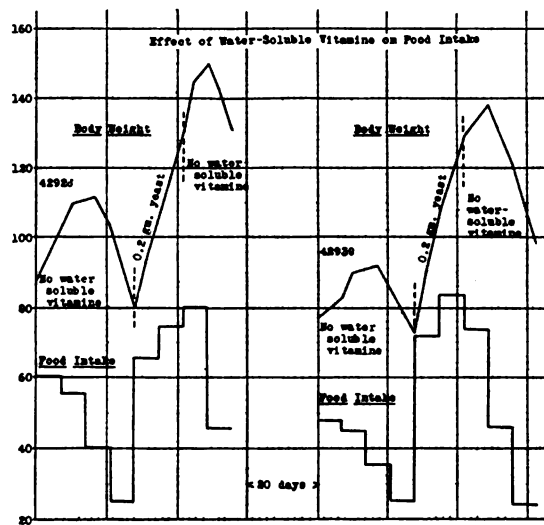


FIG. 1.—The lower line shows the grams of food eaten each week. During the first period, on a diet free from water-soluble vitamine but otherwise adequate, food intake gradually fell to a very low level. When daily doses of 0.2 gram brewers' yeast were fed body weight and food intake increased with great rapidity. When the yeast was withheld body weight and food intake, after a few days, rapidly declined. Note that during the first week of the vitamine feeding Rat 4293 ate a quantity of water-free food equal to its own body at the beginning of the week.

Because animals commonly do not eat enough of a food free from the water-soluble vitamine it has been urged that the ill effects of such a diet are simply those of slow starvation. There is, however, no longer any question that it is the administration of this vitamine which causes recovery, and not the increased food intake, which is a secondary sequel. Foods free from water-soluble vitamine are readily eaten at first, loss of appetite follows gradually, as the plane of metabolism falls lower and lower. An experiment which we have tried proves that animals will eat large quantities of foods free from this vitamine. Thus a rat which had been deprived of food for three or four days, during which it lost 25 per cent of its weight, when given a vitamine-free diet ate 50 per cent more food during the first day than is normally eaten by rats of the same size and age. During the first week the food intake averaged more than normal and almost all of the lost body weight was recovered. During the second week food intake fell to about two-thirds normal, while during the third week it was only a little more than one-third normal. After four weeks, daily doses

of only 15 milligrams of a fraction rich in the water-soluble vitamine from brewers' yeast was given. This was administered just as a physician gives a therapeutic dose, not incorporated with the food. On the first day food intake rose to the same high level as when food free from this vitamine was supplied during the first day after the period of starvation. Body weight was immediately restored and growth resumed, so that after four weeks more the young animal had attained a size equal to that which it would have reached had its growth not been interrupted by the two periods of severe loss of weight which had intervened. Figure 2 illustrates this experiment.

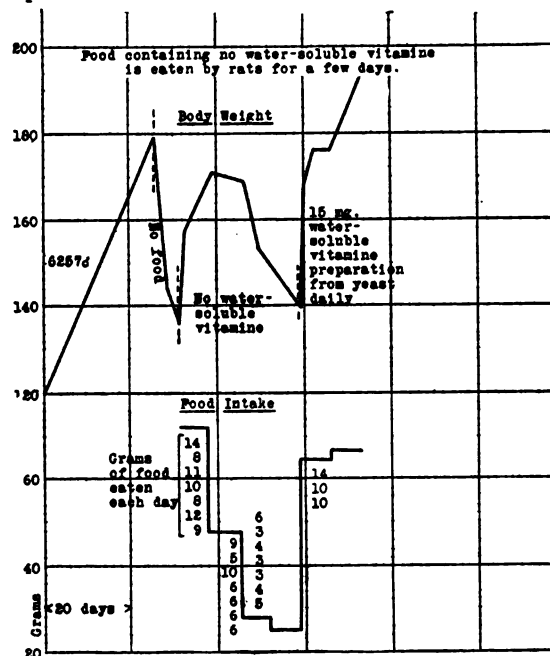


FIG. 2.—Shows that after starvation for five days a large amount of food free from the water-soluble vitamine, but otherwise adequate, is eaten during the first week, accompanied by a rapid gain of weight. Food intake and body weight then steadily decline. Daily doses of one tablet containing 15 milligrams of a concentrated preparation of the water-soluble vitamine from yeast rapidly restored both food intake and body weight. The lower line shows the grams of food eaten each day. The adjacent figures show the grams eaten each day. Note that the same large amount of food free from the water-soluble vitamine was eaten the first day after starvation as on the first day of administration of the vitamine.

Figure 3 shows the poor condition of a rat deprived of the water-soluble vitamine, and also the same animal after receiving a daily dose of this vitamine for only twelve days.

The water-soluble vitamine should prove of value in many cases which the physician meets in practice. Obviously its administration can have no effect on individuals who are already receiving a sufficient supply of it, nor on those suffering from pathological lesions, unless possibly the condition of these can be indirectly im-

proved by stimulating their metabolism. There are, however, many individuals showing no signs of organic abnormalities who live for years in a state of low vitality with correspondingly low food intake. It is quite possible that the poor appetites of such subjects are primarily due to the small proportion of water-soluble vitamine supplied by their low food intake. If this surmise is correct a stimulation of metabolism should be beneficial, and if their food intake is thereby brought up to normal the increased vitamine supply thus effected should enable them to lead more normal lives. In this connection it is of interest to note that we find considerable differences in individual rats in their requirement for this vitamine, and it is possible that those men and women who habitually eat too little food may require a larger quantity of the water-soluble vitamine than the average human dietary provides.

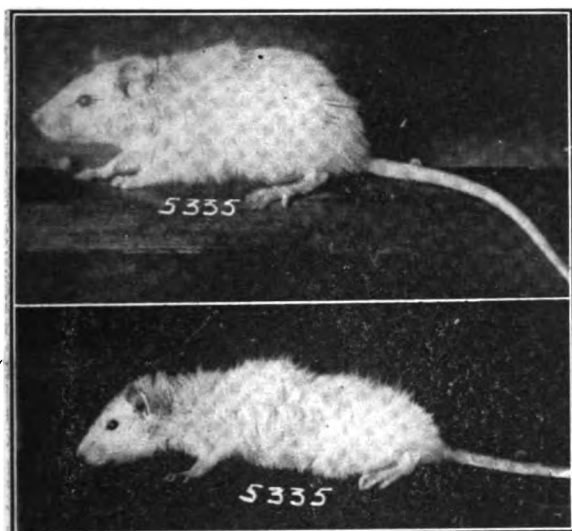


FIG. 3.—The lower picture shows a rat which had been fed for one month on a diet deficient in water-soluble vitamine. At the end of this time the animal weighed only 50 grams, was scarcely able to stand and would have died in a few hours if some source of this vitamine had not been furnished. After the picture was taken a small daily dose of yeast was given, the food remaining otherwise exactly as before. Twelve days later when the upper picture was taken this rat weighed 84 grams.

In this connection we must remember that a large part of the food of the majority of Americans has been deprived of much of the water-soluble vitamine with which it was associated before the manufacturer began to *improve* it. Thus sugar is decolorized and recrystallized until it is beautiful to look at, but entirely free from the vitamine which the cane juice originally contained. Oils and fats are clarified and purified until they delight the eye of the housewife and are entirely freed from this vitamine with which in nature they were associated. The miller care-

fully grinds and sifts his wheat until the parts containing the water-soluble vitamine are almost completely removed, so that bread made from patent flour shall be as white as possible and consequently nearly free from water-soluble vitamine.

No great harm need result from this careful purification of those foods which furnish the chief part of the calories of the average American dietary, because other food products are of such a nature as to escape the purifying process, and fortunately most people instinctively eat considerable quantities of these. No one has yet demanded eggs with white yolks or colorless spinach. Rich yellow milk and highly colored vegetables still satisfy the eye.

Many foods that have escaped these purifying processes are now often supplied in cans, or in packages containing their dried solids. It has been asserted frequently that heating destroys the vitamins and that consequently such artificially preserved foods are much inferior to the fresh as sources of the water-soluble vitamine. The water-soluble vitamine has been shown by numerous investigators to be very stable at temperatures somewhat above that of boiling water. Even boiling for several hours with 6 per cent hydrochloric acid caused little if any damage to the preparation containing the vitamine of yeast which we had made.²

Navy beans,³ soy beans⁴ or cabbage⁴ can be heated under pressure for some time at temperatures as high as those commonly used in commercial canning without materially affecting their value as sources of the water-soluble vitamine. There is no reason to suppose that the domestic cooking affects the water-soluble vitamine and there is little probability that canning seriously damages this vitamine. More precise information is still needed in respect to canned goods.

Most people instinctively eat a goodly proportion of vitamine-rich foods and consequently thrive, but there are not a few who think they cannot drink milk, or eat eggs, or do not like vegetables. Such persons may suffer from a lack of the water-soluble vitamine. Those who have capricious appetites usually eat too little, just as our rats do when their vitamine supply is too low.

In treating such people care should be taken to avoid too large a proportion of calories derived from vitamine-free products, while avoiding the other extreme of not providing calories enough. The food must furnish the needed energy if nutrition is to be normal and it must also furnish enough vitamins if good health is to be assured.

When the patient is suffering from the effects of too little water-soluble vitamine the plane of metabolism is too low to tolerate an increase in the calorie intake. It requires care to increase the relative content of the dietary in water-

soluble vitamine without at the same time increasing the calorie intake above the optimum for the existing plane of metabolism of the patient. The physician has long unconsciously aimed to do this by the liberal use of milk and fruits in the diets of convalescents and by the restriction of meats and also of so-called "rich foods," which usually contain much flour, sugar, and butter. Only when metabolism is stimulated can more food be oxidized, hence the importance of increasing the vitamine intake *before* attempting to increase the calorie intake. In treating the debilitated we should first provide an adequate supply of the water-soluble vitamine. When this is done we can expect the natural appetite of the patient to demand sufficient calories. Unless serious constitutional disturbances are involved marked improvement in condition should follow very soon.

Apart from the high plane of metabolism of youth, to which Dubois⁵ has recently directed attention, little scientific consideration heretofore has been given to the phenomena connected with the plane of metabolism of different individuals. The man in the street has long been mindful of this feature of physiology when he speaks of "vigorous" or "lethargic" people, of those full of "energy" and those "too lazy to live." A "good constitution" means something more than the absence of organic defects. What is meant by the "power of recuperation" or by "general debility"? Why are some people obese while others seem never to be able to gain weight however much they may eat? These conditions mostly concern metabolism and with them the physician frequently deals by using stimulants or sedatives. Possibly these differences between individuals depend on varying sensibility to stimuli, perhaps the vitamines, which set going the complicated series of chemical processes for which metabolism is a convenient name.

In the past the student of nutrition has devoted his attention too exclusively to the *balance* of intake and output of either energy or of one or another element of the food, and too little to the *condition* of the subjects of his experiments. It is true that Rubner discovered the so-called specific dynamic action of protein when he found that an extra quantity of heat was eliminated during a high protein diet, which more recently Lusk⁶ has attributed to a stimulation of metabolism caused by the amino-acids formed from protein by the action of the digestive enzymes. Arnsby⁷ has demonstrated a high specific dynamic action of the food of cattle, and others have shown that fats and carbohydrates increase the output of heat to a slight, but recognizable extent. We do not yet know to what degree the water-soluble vitamine has played a part in the earlier experimental investigations of these problems. It is suggestive that recent work has shown that the types of food eaten by cattle are

far richer in water-soluble vitamine than are those commonly eaten by man.

I am calling attention to these facts because I believe that a new field is open for the clinician as well as the physiologist. While our knowledge of the problems involved in the relation of the water-soluble vitamine to the plane of metabolism is still very meager and proof is still lacking that it can be technically considered to be a stimulant to metabolism, it has been established that the metabolism remains normal only when the food contains enough of this mysterious factor. The physician should therefore be assured that his patients are provided with an adequate supply. In the majority of cases he needs no special knowledge of the vitamines, because experience has taught him to use the available food products in such a way as effectually to meet this end.

The products supplying the greater part of the calorie intake of the average individual are either free from this vitamine or contain very little of it, hence it may help, in prescribing diets for special cases, or when abnormal food habits prevail, to know what has recently been learned concerning the relative value of some common articles of food as sources of the water-soluble vitamine. Dried brewers' yeast has long been used for laboratory experiments because this is richer in water-soluble vitamine than any other natural product yet tested. Yeast is not yet available for therapeutic purposes except in the form of the yeast cake, or of a few, as yet little used dried preparations. The physician will naturally prefer to employ commonly used food products wherever possible and therefore I shall now review our still scanty knowledge of their relative value for this purpose.

Mendel and I have recently found that oranges,⁸ lemons,⁹ and grapefruit⁹ are rich in the water-soluble vitamine, their juices, volume for volume, containing about as much as cow's milk. Apples and pears⁹ furnish by no means as much, while bananas¹⁰ have been stated to furnish very little.

Tomatoes¹¹ are among the richest of the vegetables on the basis of their dry solids, while spinach is a close second. Turnips¹¹ and carrots^{11, 12} contribute a goodly share to the diet. Beets^{11, 12} furnish relatively little. Cabbages^{11, 13} are fairly rich in the water-soluble vitamine. The onion¹⁴ has not yielded decisive results when fed to rats because they will not eat it freely. The few experiments that have been made, however, indicate that this vegetable contains a fair proportion. Potatoes, both white^{11, 12} and sweet,¹² must be eaten in relatively large amount if these are to supply all of the water-soluble vitamine needed. Since white potatoes form a large proportion of the average American dietary these usually furnish a considerable part of our total vitamine intake. The entire kernels

of wheat^{15, 16} rank with the dry solids of white potatoes. It was formerly assumed that the outer coats of these seeds contain the water-soluble vitamine and later it was assumed that this factor was chiefly present in the embryo. However, recent experiments¹⁶ showed that the *pure* germ does not serve as an adequate source of this vitamine, nor did wheat bran prove very efficient. Consequently it is probable that the water-soluble vitamine is chiefly located in the softer parts of the endosperm which, together with the germs and bran, are removed from "patent flour." Most white bread, therefore, contains very little of this vitamine.

There are no published data from which the approximate relative values of the kernels of rye, barley, oats, or corn can be inferred. All of these seeds have been shown to contain the water-soluble vitamine,^{17, 18} and it seems fair to presume that the amount may be about the same as in wheat. White, polished rice,¹⁹ the grade almost exclusively used in this country, is nearly free from the water-soluble vitamine, because in preparing this product for market not only the embryo, but also the seed coats and outer parts of the endosperm, are removed. Experiments with garden peas and navy beans³ have shown that these contain a considerable quantity of the water-soluble vitamine.

Among foods of animal origin milk,^{20, 21, 22} eggs,²³ liver,²⁴ kidneys,^{3, 25} and hearts²⁶ contain the most water-soluble vitamine, while muscle tissue in the form of meat^{24, 26} or fish²⁷ contains relatively little. Experiments show that, as the sole source of the water-soluble vitamine, 25 per cent of any one of the animal or vegetable products just mentioned, with the exception of meat or fish, suffices to render the diet adequate to promote the normal growth of young albino rats.

It is too early to make precise statements concerning the actual minimum of any of these food products which can be depended on to ensure the well-being of mankind because we do not yet know whether or not this can be quantitatively established by experiments with animals. Furthermore, it is not known that animals which apparently have grown to maturity on diets containing a minimal quantity of the water-soluble vitamine are in all respects normal; indeed, there is ground to suspect that such animals may suffer in their capacity for reproduction. Further studies of the chemical requirements of nutrition must be made before such questions can be finally answered, as other factors than the vitamins may affect the well-being of animals which have grown to maturity on the restricted diets that have heretofore been used in the laboratory.

I suspect that unless the plane of metabolism is first raised the subject will not be able to ingest a larger quantity of food rich in calories without suffering from the effects of overeating. Normal individuals overcome this difficulty by stimu-

lating their metabolism with exercise, but this is frequently impossible for invalids. At the present time the only safe course in dealing with the undernourished is to be sure that milk, eggs, vegetables and fruits are eaten in such proportion as experience has shown to be adequate. There is no risk incurred in encouraging the consumption of these foods in liberal quantities, because ill effects do not follow an excessive ingestion of the water-soluble vitamine. In practice it is important to remember that an increased vitamine intake should always precede an increased calorie intake.

It may not always be possible to accomplish this with available natural food products, because in these the vitamine is always associated with substances rich in calories. Even orange juice, which seems so delicate a food, when in the dry state consists mostly of sugar, and the dried solids of milk or eggs have an even higher calorific value. In such cases yeast appears to offer the best means for furnishing a relatively large quantity of the water-soluble vitamine together with a comparatively small proportion of calories. Yeast, however, consists of nucleated cells and is richer in purine bases than almost any other available food product. Of course yeast should not be used where purines are contraindicated. Possibly a concentrated preparation of the water-soluble vitamine, such as Wakeman and I made from yeast, for our feeding experiments, might prove useful. This preparation, which was completely soluble in water and practically free from purine bases, contained nearly all of the water-soluble vitamine. With albino rats a 15 milligram dose of this was as efficient as 200 milligrams of the dried yeast.

For a long time it has seemed that the problems presented by feeding our young rats were in many ways similar to those of infant feeding. Until Mendel and I learned how to supply the vitamins to young rats we had endless troubles which are now completely overcome. While milk in its natural state contains an abundance of vitamins this is not the case when its water content is increased by adding water and its calorie content raised by adding lactose or maltose. Here we have double dilution, for while the child might overcome the dilution with water by consuming a greater volume, the dilution with the vitamine-free calories furnished by the sugar is insurmountable, if this be carried beyond a limited extent. Milk mixtures which in practice have proved adequate for the healthy child, consuming a normal quantity, may prove wholly inadequate if, for any reason, its food intake is materially restricted. Under such circumstances the vitamine intake is reduced, and soon the appetite will fail in consequence. This still further lowers the vitamine supply and appetite diminishes still more, with results too apparent to need further mention. The proper way to

deal with such cases is to increase vitamins without increasing calories, which is not easily done. Orange juice affords a means, especially if the sugar in the formula is proportionately reduced, and provision for increasing the fat-soluble vitamin, which the cream supplies, is also made by adding more cream and proportionately less calories from sugar. A simple way would be to add some concentrated soluble preparation of the water-soluble vitamin if such a one ever becomes available.

In this brief review of the relation of the water-soluble vitamin to nutrition time has compelled me to omit much that might be of interest, but this paper will have served its purpose if it has made clear the importance of considering the relation of the water-soluble vitamin to calories.

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Discussion.

DR. ELMER V. MCCOLLUM, Baltimore, Md.: It is with great satisfaction that I am able to say, after having listened to the several papers presented in this symposium, that I can agree with practically every statement which has been made. There is, therefore, remarkable unanimity of opinion among the group of workers who have contributed in a large way to our knowledge of the unidentified dietary essentials.

I cannot avoid feeling that one of the most important things that can be done on this occasion is to call attention to the fact that there are other factors in nutrition which are fully as important from the standpoint of the well-being of man as are these factors which are concerned with the recognized specific dietary deficiency disease—xerophthalmia, beriberi and scurvy. In fact, I have come to feel that probably other factors are of greater practical importance than any relating to a shortage of one or another of the so-called "vitamines."

It is now well established that for omnivorous animals, such as the farm pig and the rat, it is not possible to secure satisfactory growth and nutrition with diets restricted to cereal products, legume seeds (peas and beans), tubers, fleshy roots, and muscle meats. We understand exactly the nature of the dietary shortcomings of such mixtures. They are all too poor in calcium, and in sodium and chlorine, to maintain normal nutrition in a rapidly growing species. It is impossible to say at present how far the slow-growing human species is able to tolerate a low intake of these elements. All such mixtures of natural foods contain too little of the unknown substance—fat-soluble A—which is responsible when absent from the diet, or nearly so, for the development of a peculiar type of ophthalmia. In my laboratory during the last five years it has been abundantly demonstrated that there are but two types of diet composed only of natural foods which succeed in the nutrition of animals. These are the types of diet used by man in different parts of the world, *i. e.*, diets which contain liberal amounts of leaves of plants, as are characteristic of the diets of many people of the Orient; and diets which contain an abundance of dairy products, as is the case over most of Europe and North America.

Dr. Goldberger's studies on the dietaries of pellagrous and non-pellagrous households in South Carolina form very strong experimental support of the view that such types of diet as lack green vegetables and milk are not satisfactory for the nutrition of man, and in some way form a contributing factor in the etiology of pellagra. While calcium is the only inorganic element which is most likely to be present in deficient amounts in the American and European

diet, iron is another element which will frequently not be present in optimum concentration.

It should be emphasized that there are many reported data in the literature of nutrition describing relatively short successful growth experiments, which would tend to mislead the reader who has given no especial attention to this field of knowledge. The fact that a diet may support normal growth even during the entire period in which growth normally takes place does not constitute a proof that it will be satisfactory throughout the entire life of the individual. This has been so definitely forced upon our attention that we have in recent years followed the practice of keeping all of our experimental animals throughout the life cycle. Indeed, every family, where young are produced and reared, is continued through two, three, or four generations. In this way we are able to observe not only the growth curve, but also the reproduction records, the infant mortality, the success in rearing the young, whether they are under-sized or normal, etc. We also observe them very carefully to detect the first evidences of appearance of old age, as exhibited in coarseness of hair, tendency to baldness, dryness and roughness of the skin, irritability, excessive timidity, and gradual attenuation of the body. By making use of this method we are able to detect faults in the diet which are not of sufficient gravity to become apparent in growth experiments.

The results of our many studies have afforded convincing evidence that the bread, potatoes and meat type of diet—by which I mean bread and other cereal products, potatoes and other tubers, together with muscle cuts of meat, such as ham, steak and roast—is not satisfactory in its chemical make-up for the maintenance of normal nutrition. The most important thing which we can do in raising the standards of health and vigor in the American people is to cultivate in them the habit of taking more dairy products in their diet, and of eating liberally of such leafy vegetables as cabbage, lettuce, spinach, cauliflower, Brussels sprouts, Swiss chard, turnip tops, dandelions, beet tops, etc.

I cannot go into great detail on this occasion to point out the exact natures of the deficiencies of various combinations of foods, nor can I give you an extended account of the effects of faulty diets of different types. These have been described in numerous papers from my laboratory.

In closing I would like to emphasize that I disagree with Dr. Osborne on one point, and that is the advisability of encouraging the medical profession or the general public in believing that concentrated preparations of any "vitamine" can be used to special advantage in the treatment of malnutrition or of disease. It is easily possible with the knowledge we now possess of the special dietary qualities of our more important natural foods to plan diets consisting of our ordinary foodstuffs which will supply at least two or three

times the minimum amount of any of the so-called "vitamines" necessary for the maintenance of normal health and vigor in experimental animals. This doubtless also applies in the nutrition of man. I regard it as a step in the wrong direction to give the medical profession the idea that there may be expected marked therapeutic effects from commercial preparations of "vitamines" such as are now on the market from a number of sources. The clinician must keep abreast of the times in the literature of nutrition, and make use of such knowledge as we possess regarding the proper combinations of food for the promotion of physiological well-being. Such types of diets not only have a great value therapeutically, but knowledge concerning them now constitutes the subject matter used in the instruction of students in nutrition. This knowledge is steadily, though slowly, reaching the general public, and will doubtless be reflected in due course of time in an improvement in the standards of health and physical efficiency of our people.

DR. CASIMIR FUNK, New York: To the highly interesting and important papers of Drs. Mendel, Osborne, Hess and McCollum, I wish to add just a few words on the chemistry of vitamins. It seems to me that there is more known on this subject than is generally admitted.

In 1913 I undertook a continuation of my chemical studies on the antiberiberi vitamin from yeast and rice polishings (*J. of Physiol.*, 46, 173, 1913), with the result that the vitamin fraction was divided into several substances which were all carefully purified and analyzed. The new English report (Medical Research Committee, Special Rep. Ser. No. 38, 1919), in a review of my work, states that the substances obtained by me, are nothing else than contaminated nicotinic acid. This is certainly not the case. It is true that in a subsequent publication (*Bio. J.*, 8, 598, 1914) I was able to show that the substance from rice polishings was nicotinic acid, and the analysis published in 1913 proved that it was pure nicotinic acid, in spite of the fact that originally a different chemical formula was calculated from the analytical figures obtained. Neither in 1913 nor in 1914 did I publish any results of animal experiments claiming the substance from rice polishings to be effective in curing avian beriberi, and this for the simple reason that no curative action was ever obtained.

The case of yeast is different. Here dealing with a starting material, much richer in vitamin, a better fractionation was effected by a somewhat different procedure, which permitted an outright separation of nicotinic acid from the curative material. My results were confirmed by a number of investigators, among these Schauermann, Vedder and Williams and others. Re-

cently Dr. Eddy and also myself have tested the substance from yeast, isolated by me in 1913 with a method described by Williams and by Miss Bachmann, and we both found it active after seven years of storage. My work on yeast being never experimentally refuted, I still claim that I have isolated the antiberiberi vitamine, possibly in a somewhat attenuated form (due undoubtedly to the large amount of manipulations necessary to arrive at a pure substance) but still exhibiting an unmistakable curative action.

I wish also to emphasize the fact, that it would be a mistake to try to limit at the present time the number of possible vitamins to two or three, namely, the antiberiberi, antiscorbutic and antirachitic vitamins, and this also applies to the avitaminoses. With the increased amount of research in this field, it is most likely that many more vitamins will be identified as separate entities and their importance in health and disease determined. Nothing does more harm to the progress of a new experimental chapter than imagining that we know it all and trying to close the chapter prematurely.

Finally, I wish to point out that in the last few years statements are encountered in the literature, naming one or the other investigator as the spiritual father of the vitamine research. There is, however, not the slightest doubt that we owe to the Dutch pioneers in this field, Eijkman and Grijns, the first place.

When, early in 1911, I started my experiments on deficiency diseases, after a careful perusal of the then existing literature, I could choose only the splendid experimental work of Eijkman and Grijns, the clinical data of Fraser and Stanton, Takaki and the somewhat unclear data of Schaumann, as the basis of my work.

DR. L. EMMETT HOLT, New York: It is well known to everyone who has studied the question at all that the best laboratory studies in nutrition have been done in the laboratories of this country. I have visited the laboratories of Drs. Mendel, Osborne, and McCollum. Of course, it was possible for them to do with their animal patients what we could not do with our children. Their patients had no relatives, and, of course, they had no difficulty in obtaining autopsies to see what the results of their feeding had been. They could control their conditions—a great advantage—and they had contributed a great deal to the understanding of the problem of nutrition as applied to children. Nevertheless we must be careful in carrying over into human practice the conclusions derived from animal experiments and observations. One thing that should be emphasized was the widespread occurrence of these substances in our common foods. It was the patient who had come to restrict his diet to a few things who was likely to suffer, or it was

the child who had been fed on an exclusive diet who got into trouble from the lack of special vitamine. The person who ate our common foods in their natural state got an abundant supply of all these vitamins. For various reasons the tendency at the present time was not to let well enough alone; our foods were continuously purified for use without being improved. Milk was pasteurized and foods were dried, and we had got so into the habit of eating these foods that the danger of deficiency diseases was increased. I thought the practical lesson was that we should eat a variety of foods and not limit ourselves or our children to a narrow diet. One of the things that should be impressed was that the child should be taught to eat the proper food. We saw the whims of the child catered to by indulgent parents who gradually came to omit very necessary articles from the child's diet. Pediatricists realized more and more the importance of a general diet for a child. We heard about milk being the perfect food. Cow's milk was not a perfect food even for the calf. The calf was usually born with eight teeth and began to take other food than milk (usually grass) when but a few weeks old. Evidently it was not intended for the calf to live exclusively on milk. We have seen much harm done to children who, refusing other food, have been kept for a long time on an exclusively milk diet.

In all these deficiency diseases the one that concerned us most was the antiscorbutic vitamine, the absence of which produced infantile scurvy. The speaker had been interested in observing how long it took to produce scurvy. Scurvy could be produced in a guinea pig in eighteen to twenty days, and death would occur in about five weeks. A monkey that was fed on a diet that contained no antiscorbutic principle would develop scurvy in about three months. How long did it take a child fed on pasteurized milk to develop scurvy? How soon was it essential to give antiscorbutic vitamine to a child fed on pasteurized milk? The speaker had recently seen two infants who were fed only on pasteurized milk with cereal additions; in one of these infants scurvy developed at eight months; in the other in about seven months. We knew that the pasteurization of milk did not destroy the antiscorbutic vitamine, it only impaired it; and pasteurized milk had less of the antiscorbutic vitamine than raw milk. Of course, the condition of the infant fed on pasteurized milk was not parallel to the condition of the animal wholly deprived of antiscorbutic vitamine. Apparently an infant who was getting pasteurized milk as its chief source was not likely to develop symptoms of scurvy for several months, usually seven or eight. Consequently he thought it necessary in practice to give the infant certainly as early as six months some antiscorbutic vitamine, as a regular part of the diet. Dr. Hess had spoken of tomato juice, that was certainly the

cheapest for hospital, dispensary, and institution practice. The speaker had found it well borne and effective. Patients in the dispensaries had complained that tomato juice was almost as expensive as orange juice. If a ten-grain powder of benzoate of soda was added to a pint can of tomatoes, it would keep until used up. Tomato juice should be strained, but could be given to infants six months old and in the same dose as orange juice with beneficial results in the prevention and cure of scurvy. He had also been interested in the effects of dried orange juice. The process was that used in the drying of milk, viz., spraying into a hot chamber. In three cases he had cured scurvy promptly with orange juice that had been dried a year before. Apparently the drying of orange juice did not impair its antiscorbutic properties, nor did the keeping of orange juice for long periods of time injure it. As far as the other vitamins were concerned, it seemed that children were sure to get enough of them unless they belonged to families where children had their own ways in matters of diet; except for that he did think we were apt to see trouble from the lack of fat-soluble or water-soluble vitamins. Of course, we realized that milk was a very necessary part of the diet for children, and if milk and green vegetables were given freely, the fat-soluble and the water-soluble vitamins would be provided adequately.

DR. GRAHAM LUSK, New York: It is only four years ago since Dr. F. C. Gephart and I published a little book which contained his analyses of portions of foods sold at Child's Restaurant. At that time we came to the conclusion that, as far as caloric content was concerned, the tomato was as expensive as champagne and that it apparently had no food value but was merely flavored water colored red.

Since that time Dr. Hess has shown the presence of antiscorbutic vitamins in the tomato and Dr. Mendel just reports the presence of the fat-soluble vitamins therein.

It seems that the facts as presented at this symposium should be better known to the general public. It seems that the knowledge of food may best be imparted to the public through a national nutrition laboratory established in Washington. Such a nutrition laboratory is to be established in Holland by Professor Van Leersum and is to deal with (1) research; (2) agricultural and food statistics; (3) intelligent propaganda. This country should be provided with a similar institution.

MAURICE J. LEWIS, New York: The subject under discussion is highly interesting and the papers and the comments on the same are illumi-

nating. However, would it not be like throwing a monkey-wrench into the smoothly running machinery of this meeting to ask for a precise chemical definition of the word "Vitamine?" Until you gentlemen skilled in laboratory methods can produce the vitamins "bug," or more precisely—the chemical entity, Vitamine, the struggle is in the dark. Theoretically, we are assured of our ground along the lines of Funk's deductions, but before practical measures are possible it must be ours to know that the vitamins are of definite construction and that it has been isolated. My own small part in the vitamins question was undertaken in conjunction with Dr. Dubin and has been recorded in the February, 1920, number of the *American Journal of the Medical Sciences*. As set forth in that article, we proved to our own satisfaction through clinic tests, supplemented by chemical analyses of all foods ingested and of all excrements discharged, that a given combination of materials, supposedly rich in vitamins, added to the selected food given to children suffering from malnutrition (without pathologic manifestations), which had resisted the usual treatments, was potent in producing body-growth and in restoring normal physiologic function in all that pertained to alimentary metabolism. Further experimentation along these lines will have to be continued in order to verify these findings. What an asset it would be in achieving tangible and reliable results were we to know the chemical constituents of the variously styled vitamins!

I am in perfect accord with Dr. McCollum in his view that the stamp of medical approval should not be placed on any product offered for sale as "vitamine rich" which does not meet the tests prescribed by those who are competent to pass upon the same.

However, I do not subscribe to the theory that we should not attempt to advance clinically from what is already known on this subject.

If all investigators were in accord as to the vitamins content and the efficiency of the various foodstuffs, the need for a vitamins preparation might not be urgent. As it is, there is a definite place in the clinic as well as in the laboratory for a pure and efficient vitamins product. The whole vitamins question is still in the making, and the views of today may not be those of tomorrow. The present situation is confusing to the practising physician who obtains only a superficial glimpse of the literature of this subject. I believe that a pure preparation of the three accepted vitamins would be of distinct value both for diagnosis and for treatment. It would facilitate the application of vitamins therapy where vitamins-containing foodstuffs are now for one reason or another unavailable or inapplicable. It would mean progress—a very valuable increase in both laboratory and clinical data.

A COMPARATIVE STUDY OF THE DIAGNOSIS OF SPECIMENS FROM CASES OF TYPHOID FEVER, TUBERCULOSIS AND DIPHTHERIA IN DIFFERENT LABORATORIES OF NEW YORK STATE.*

By ELLEN FINLEY and
JOSEPH S. LAWRENCE, M.D.,

ALBANY, N. Y.

ACCURATE methods of diagnosis are a prerequisite to a successful system for the control of a communicable disease. Public health laboratories can render very valuable assistance to the physician in arriving at a correct diagnosis, but it is not sufficient for a medical practitioner to know that there is a laboratory at his command; he must be confident that its work is accurate.

A difference in reports on the same specimens from different laboratories does not necessarily indicate variation in precision of work nor does it follow that one or the other is entirely wrong. Bacteriology is still in the stages of development. A standard technique, slowly crystallizing out of the work of a large number of individual laboratories, has indicated that many times a dissimilarity in reports is due in large measure to the employment of a different terminology or to a variance in the degree of delicacy in interpreting findings. These differences frequently characterize the bacteriologist; to the busy physician they are often confusing and annoying. Uniformity of methods employed in examinations of specimens and wording of reports on results of examinations are imperative in order to secure the highest laboratory efficiency for public health officials.

In New York State there are more than thirty laboratories doing public health work. They may be divided according to their financial support into four groups, state, county, municipal and private laboratories. A number of the laboratories were started by physicians who consented to make some examinations in their offices for their brother practitioners. When Dr. A. B. Wadsworth became the Director of the Division of Laboratories and Research of the State Department of Health, he prepared a simple outline of procedure for the more common laboratory examinations which all bacteriologists doing public health work were requested to adopt in order to secure uniformity of technique. Under this system the laboratory work of the state developed very satisfactorily and bacteriologists were able to confirm one another's findings and agree upon reports. To secure definite evidence of the efficiency of this system a general interchange of

specimens was made in 1916, stained specimens from diphtheria cultures being prepared by Dr. Wadsworth and his associates and distributed among the various laboratories. Owing to difficulties developing as a result of confusion from many bacteriologists going into military service, the experiment was not, at that time, completed.

In 1918 this interchange of specimens was again undertaken. Drops of blood taken from rabbits being immunized against typhoid bacilli were distributed with a request that they be examined for typhoid agglutination. Three rabbits were chosen because of the quality of the titre of their blood. One had a strength of titre that agglutinated in dilutions up to 1/320, another agglutinated weakly at 1/80 while a third showed clumping only in 1/40. A fourth specimen was prepared from normal blood.

The outfit used consisted of two aluminum plates with a depression in the center of each. A drop of blood was let fall into the depression in each plate and allowed to clot and to partly dry in the air. The specimens were then put into the cold room until mailed. With each specimen was sent the following report sheet and instructions:

WIDAL REACTION

Technique to be observed:

"Specimens are to be diluted 1-10, 1-20 and 1-40, using either water or physiological saline solution. The dilutions are to be compared by color with standard dilution of known quantities of blood which have been dried and then diluted. Eighteen-hour broth cultures are to be used. One drop of this culture and one drop of the 1-10, 1-20, 1-40 dilutions of dried blood are to be used making the final dilutions 1-20, 1-40, 1-80. The readings are to be made after one hour's incubation at 37° C." Report on accompanying diagram using x to signify agglutination, — no agglutination, and P partial agglutination.

REPORT	DILUTIONS		
	1-20	1-40	1-80
I			
II			
III			
IV			

Specimens were given to five bacteriologists in the state laboratory for examination at the same time that the other specimens were sent out. As the report sheets were received they were numbered and these numbers were chosen to designate the laboratories in the tabulation.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

CHART I

DILUTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	A	B	C	D	E
Specimen No. I																																					
1/20	P	+	+	P	P	+	—	+	+	—	+	+	+	P	+	+	+	+	+	+	+	+	+	+	+	+	+	+	—	+	+	—	+	+	+	+	+
1/40	P	+	+	—	P	+	—	+	+	—	+	+	+	P	+	P	+	P	+	+	+	+	+	+	+	+	+	+	—	+	+	—	+	+	+	+	+
1/80	P	—	+	—	—	+	—	—	+	—	+	—	+	—	P	P	+	—	+	P	P	+	+	+	+	+	+	—	+	—	+	P	—	+	+	P	+
Specimen No. II																																					
1/20	—	—	P	+	—	+	—	—	—	+	+	—	+	+	+	P	+	—	+	—	+	—	—	+	—	—	—	+	—	P	+	+	—	+	P	+	+
1/40	—	—	P	+	—	+	—	—	—	+	P	—	P	—	—	—	—	—	P	—	+	—	—	+	—	—	—	+	—	P	—	+	—	P	P	+	+
1/80	—	—	P	+	—	—	—	—	—	+	—	—	P	—	—	—	—	—	—	—	—	—	+	—	—	+	—	—	—	—	—	P	—	P	P	P	P
Specimen No. III																																					
1/20	+	+	+	+	+	+	+	+	+	+	+	—	+	+	+	+	+	+	+	+	+	+	+	+	P	+	+	+	+	+	+	+	+	+	+	+	+
1/40	+	+	+	+	+	+	+	+	+	+	—	+	+	+	+	+	+	+	+	+	+	+	+	P	+	+	+	+	+	+	+	+	+	+	+	+	+
1/80	+	+	+	+	+	+	+	+	+	P	+	—	+	+	+	P	+	+	+	+	+	+	+	P	+	+	+	+	+	+	P	+	+	+	+	+	+
Specimen No. IV																																					
1/20	—	—	—	+	—	—	—	+	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	
1/40	—	—	—	+	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	
1/80	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	

A—E = Diagnosticians in State Laboratory at Albany

+ = Agglutination.

P = Partial or slight agglutination.

— = No agglutination.

The reports were numbered as they were received and these numbers are used to represent the laboratories.

Specimen No. I — Weak positive

Specimen No. III — Strong positive.

Specimen No. II — Weak negative.

Specimen No. IV — Strong negative. Normal blood.

A glance at the chart shows a most satisfactory uniformity in the reports. Specimen 1 was weakly positive, agglutinating poorly in dilution 1/80, and it was so reported by all but six laboratories. Specimen 2 was considered a weak negative, showing occasional clumping in dilution 1/40. Fifteen of the examiners reported this specimen as negative. Eighteen found agglutination or partial agglutination in the first dilutions only, while four reported agglutination in all dilutions. It is possible that three of these (Nos. 4, 10 and 21) may have confused the reports of specimens 1 and 2. Only six failed to find powerful agglutination in specimen 3, which was chosen as the strong positive, agglutinating in a dilution of 1 to 320. Specimen 4 was normal rabbit blood and was reported negatively by all but three. It should be said in explanation of these variations that in every instance those reports showing the greatest discrepancy were submitted from laboratories where the volume of work is very small.

In addition to a comparison of the results obtained, several other factors are worthy of note. First, the specimens used were of dried blood. Ruediger and Hulbert* have stated that in their experiments along similar lines that they found this method was feasible, but such an extensive test as we have made has not been previously re-

ported. In our experiment the dilution was of the "hit or miss" type which, although not scientific, yet shows itself to be practical. Second, previous workers have reported no appreciable deterioration in the agglutinating titre in two weeks. In our work more than three months elapsed between the time of bleeding and the examination of the last specimens. The results showed that in this time the strength of the agglutinating serum had not depreciated enough to make any change in the findings. To further confirm this observation, specimens were given to the five state laboratory diagnosticians and they reported that if there was any deterioration it was barely perceptible.

Encouraged by the results of this experiment it was decided to distribute stained preparations among the laboratories to be examined for the presence of *B. diphtheria*. In the preparation of these smears the following technique was observed:

Ten specimens were chosen from cultures sent to the State Laboratory at Albany. Three (A, B, E) were selected because of luxuriant growth of a typical organism from cultures sent in for the initial diagnosis of diphtheria, three others (C, D, F) were selected from release cultures and contained organisms with less typical morphology and four (G, H, I, J) were taken from cultures

* American Journal Public Health, Vol. 4, No. 2, page 113.

CHART II
RESULTS FROM EXAMINATION OF DIPHTHERIA SPECIMENS

LABORATORIES	1	2	3	4	5	6*	7	8	9	10	11	12	13*	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Specimen A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	H	+	+	
B	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	U	+	+		+	+	+	+	+	+	+	H	+	
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	H	+	+
D	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	H	+	+	+	+	+	+	+	+	+	+	+	+	H	+	+
E	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
F	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
G	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
I	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
J	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Specimens A, B, and E showed morphologically typical *B. diphtheriae*.

Specimens C, D and F showed morphologically less typical *B. diphtheriae*.

Specimens G, H, I and J contained no *B. diphtheriae*.

Numbers represent same laboratories as in Chart II except for numbers marked with (*). U = Unsatisfactory specimen.

+ = Positive.

— = Negative.

H = *B. hoffmani*.

that contained no diphtheria bacilli. From each specimen one hundred films were spread on new glass slides within twenty-four hours of the time the culture was received at the laboratory. The specimens were designated by letter in the order chosen and the slides were numbered in succession as made. The films were allowed to dry in the air, then fixed by passing through a flame. To prove the worth of the specimen the 20th, 50th, 70th, 90th and 100th films were stained with Loeffler's methylene blue and examined. If the examination of these five films showed them to conform with the first film prepared the remainder were set aside to await the results of cultural and virulence tests. No specimens were accepted unless the organisms gave the classical cultural reactions in the sugars and a positive virulence reaction when introduced into animals.

To every laboratory was sent a preparation from each of the ten specimens, information sheets containing all the facts submitted with the original specimen except the names of the physicians and patients and a request that the bacteriologist stain the specimens according to his own technique and report his findings promptly. A compilation of the reports received is shown in the accompanying chart. The laboratories are designated by the same numbers as in the preceding experiment.

A study of the reports received reveals the following:

Specimens A, B, and E typical cultures of *B. diphtheria*.

Specimen A, positive by 28 bacteriologists, negative by 2.

Specimen B, positive by 24 bacteriologists, negative by 4.

Specimen E, positive by 29 bacteriologists, negative by 1.

Specimens C, D, and F—Not quite typical cultures of *B. diphtheria*.

Specimen C, positive by 21 bacteriologists, negative by 9.

Specimen D, positive by 21 bacteriologists, negative by 9.

Specimen F, positive by 15 bacteriologists, negative by 13.

Specimens G, H, I, and J.—Contained no *B. diphtheriae* but *B. hoffmani* and *B. pseudo diphtheriae*.

Specimen G, positive by 5 bacteriologists, negative by 24.

Specimen H, positive by 11 bacteriologists, negative by 19.

Specimen I, positive by 10 bacteriologists, negative by 18.

Specimen J, positive by 0 bacteriologists, negative by 24.

CHART III
RESULTS FROM EXAMINATION OF SPUTUM SPECIMENS

LABORATORIES	1	2	3	4	5	6*	7	8	9	10	11	12	13*	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Specimen A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
B	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
D	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
E	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
F	—	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
G	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H	—	—	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—	—
I	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	+	—	+	—	—	—
J	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Specimens A, B, C, D showed more than one tubercle bacillus per field.

Specimens E, F, G showed one tubercle bacillus in from three to ten fields.

Specimens H, I, J had no tubercle bacilli.

Laboratories represented by same numbers as in Chart III.

+ = Positive.

— = Negative.

It must be remembered that while special care was taken to give each bacteriologist all the information and advantages of study that we possessed, it was not possible for him to see the culture itself and occasionally an examination of the growth on serum is a material aid in diagnosis.

As a third step in the experiment a set of slides were prepared from ten sputum specimens and were distributed among the laboratories with the request that they stain and examine for the tubercle bacillus. The same technique was employed in preparing the films and submitting the specimens as that reported in connection with the diphtheria work. Four specimens (A, B, C, D) were chosen because they showed more than one organism to the field, three others (E, F, G) showed one organism in from three to ten fields, and three (H, I, J) were definitely negative. In submitting the films information was given as to whether the original specimen was for an initial examination, or for a re-examination. If it was for re-examination the results of the previous examinations were given.

The results of this experiment are shown in Chart III. The laboratories are again designated by the same numbers as in Chart I.

An examination of this chart will show that there was almost entire agreement in the reports received.

Specimen A was found positive by 30 examiners.

Specimen B was found positive by 29 examiners, negative by 1.

Specimen C was found positive by 28 examiners, negative by 2.

Specimen D was found positive by 30 examiners.

Specimen E was found positive by 29 examiners, negative by 1.

Specimen F was found positive by 26 examiners, negative by 4.

Specimen G was found positive by 27 examiners, negative by 3.

Specimen H was found positive by 2 examiners, negative by 28.

Specimen I was found positive by 2 examiners, negative by 28.

Specimen J was found positive by 0 examiners, negative by 30.

CONCLUSIONS

1. Standardization of laboratory methods of examination of specimens and systems of reporting results is desirable.

2. Blood from rabbits immunized against typhoid bacilli makes satisfactory specimens for agglutination tests.

3. For submitting dried blood specimens the aluminum plate gives satisfactory results.

4. Occasional interchange of specimens for examination and comparison of results promotes uniformity.

5. Employment of uniform methods in examination of specimens and the reporting of findings promotes standardization.

SURGICAL TREATMENT OF HYPERTHYROIDISM—RELATION EXISTING BETWEEN THE AMOUNT OF GLAND REMOVED AND THE PERMANENCY OF RELIEF.*By **GEORGE E. BEILBY, M.D.,**

ALBANY, N. Y.

THE surgical treatment of exophthalmic goitre has pretty generally won the recognition which it deserves. We still occasionally hear a dissenting voice on the part of physicians. This is due either to a lack of knowledge of the results that are being obtained or to a strong prejudice which no amount of proof can overcome.

It is true that a decade ago the results were not all that could be desired, but to-day in the hands of experienced operators the operative mortality will compare favorably with other major operative procedures. Several factors have contributed to this marked lowering of the mortality rate. Of first importance has been the careful preparation of patients and the selection of time for the operation. Of equal importance in my experience has been the employment of an anesthetist particularly skilled in the management of these cases and an improvement in technic whereby the time required for the operation has been materially shortened.

This phase, then, of this important question seems to have been thoroughly and conclusively covered. No very strong objections can now be raised against the surgical treatment of exophthalmic goiter on the basis of the primary or operative mortality. A question of extreme importance, however, is constantly arising and must be answered. Will the operation which you have done or propose to do in a given case afford permanent relief? In order that this question may be answered with some degree of accuracy I have made a careful analysis of 77 cases operated upon by me at the Albany Hospital for the relief of exophthalmic goiter or for definite symptoms of hyperthyroidism. These do not include the cases of simple hypertrophy, tumors or cysts.

In 13 cases of this series the operation was done in stages, that is, at the primary operation only one lobe or a portion of one lobe and the isthmus were removed. In the remaining 64

cases a complete operation was done at one time. Of the 13 stage cases, 4 had been operated upon once before coming into our hands, so that, in only 9 cases did we undertake this method as the procedure of choice.

In the first place in reference to the stage operation: it has been my experience that it is difficult to induce patients to submit to more than one operation for the relief of this condition. If they are appreciably benefited they are inclined to accept this as the best result that can be obtained, and if no marked improvement occurs they become discouraged and skeptical of operative relief. All of these cases, however, after a sufficient amount of the gland has been removed, have been either completely cured of toxic symptoms or greatly benefited. Of the remaining 64 cases in which a complete operation was done, that is, a bilateral subtotal excision, there has been no evidence of a hypertrophy of the remaining gland tissue and no return of symptoms. These results have compelled me to revise somewhat my methods and ideas, as well, with regard to the operative technic as to the management of these cases. I find that in the past two years, during which time one-half of these patients were treated, no cases were selected for the stage operation and there has been no recurrence after a single subtotal excision.

There seems to be a still rather prevalent opinion that the desirable method of treatment is the removal of one lateral lobe, or at most, one lobe and the isthmus of the gland, even in patients that are excellent operative risks; that the taking away of more than one-half or two-thirds of the thyroid gland is not compatible with the life and health of the individual, and that the removal of one lobe is all that is necessary to effect a complete cure. Experience, I think, has proven that patients derive little or no lasting benefit from such an operation. If any improvement is observed it is, at the most, of short duration, usually from six months to one year, during which time an hypertrophy of the remaining gland tissue takes place, compensatory in character, until the total amount of gland tissue present is practically the same as before any operation was undertaken.

It is a well-recognized fact that many cases of an extreme toxic nature are unable to withstand as extensive an operation as is required to prevent a recurrence of symptoms without some

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

preliminary treatment. Herein lies, to a large degree, the explanation of the material improvement that has been shown in the mortality rate. As to just what form of preliminary treatment affords the greatest benefit, opinions are somewhat at variance.

In my hands litigation has not been altogether satisfying. Even where done under local anesthesia it is frequently followed by a severe reaction and the improvement, when any is noted, does not reach its maximum until two to four months have elapsed and then is of comparatively short duration. This method necessitates two operations and on account of the difficulty frequently encountered in inducing patients to return for the second operation, its objections are obvious.

Repeated injections into the glands of boiling water as first suggested by Porter, with the purpose in view of rendering areas of the gland temporarily inactive, has met with some favor. Such injections, however, are not entirely devoid of danger. They must be repeated at intervals over a period of several weeks. In some instances decided benefit has been observed so that as a measure affording temporary relief it is worthy of consideration. Our clinical observations and the examination later of gland tissue thus injected, would seem to prove that if there is an actual destruction of cells following the injection, complete regeneration occurs after a short period, so that while the method may give temporary relief it should not be accepted as a proved therapeutic measure. In the preparation of these severe toxic cases for operation our own preference has been to combine rest in bed with local and constitutional treatment according to the indications presented by the individual case, until the acute toxic symptoms subside.

I would repeat with reference to the stage operation, it has been my observation that where only a portion of the gland is removed and the circulation of one lobe, for instance, is left undisturbed, the reaction which follows is often more severe than where a subtotal excision is done, so that I believe that a partial resection of the gland is not a desirable procedure, and should only be done when difficulty is encountered at the operation or when a prolongation of the anæsthetic might endanger life.

In the light of our present day experience I think we are able somewhat to revise our ideas with reference to the total amount of gland tissue which is necessary to sustain life and health. I believe that in the past the tendency has been, in operating for the relief of exophthalmic goiter, to leave behind too much rather than too little thyroid tissue. It would be very desirable indeed if some accurate means could be devised to determine the exact amount of such tissue required, but so many factors enter into the determination of this matter that it would be difficult, if not impossible, to attempt to formulate

any rule which would serve as a useful guide in determining the exact amount of gland tissue which should be left in a given case. Again, I believe that not so much depends upon the total amount of tissue left as on its distribution, and blood supply. For instance, if one-third or one-fourth of the total amount of gland tissue remains as a portion of one lobe, with its more or less undisturbed blood supply, the chances are altogether in favor of a hypertrophy of this portion of the gland tissue taking place, and we have in due time a return of toxic symptoms. If, on the other hand, this same amount of gland tissue is left as small bits of tissue distributed throughout the entire site of the gland, there is no likelihood whatever of hypertrophy of these pieces of gland tissue taking place. In none of my cases operated upon in such a way that only portions of tissue were left attached to the posterior capsule has there ever been any evidence of hypertrophy or return of symptoms, even though an estimated one-fourth of the entire gland tissue has been left behind.

It is my custom in controlling the blood supply and removing the gland to pass all ligatures through gland tissue as close to the posterior capsule as possible, and in this way stumps of tissue are left which are completely tied off and deprived of their blood supply. These bits of tissue either atrophy or degenerate and are discharged later with the drainage. It seems evident, then, that in removing a gland in this manner the amount of tissue left which remains viable is in reality only a small fraction of the total amount present in the beginning. I have variously estimated this as one-sixth to one-tenth of the entire hypertrophied gland. Notwithstanding so complete a removal has been done, no case has presented the slightest evidence of hypothyroidism or of parathyroid deficiency.

In conclusion, I would emphasize the following:

1. The removal of one lobe of the thyroid gland in exophthalmic goitre may give temporary relief but will not effect a cure.
2. If only a portion of one lobe is left and its blood supply is undisturbed, its hypertrophy and a recurrence of symptoms may be expected.
3. With careful preparation and selection of time a complete operation may safely be done in most cases at one time.
4. Where sufficient gland tissue is removed the toxic symptoms promptly and completely disappear.
5. This relief is a permanent one if the gland tissue which remains is not left in a condition such that hypertrophy may take place.
6. That the experience in a sufficient number of cases justifies the belief that with the removal of the amount of gland tissue referred to, no symptoms of thyroid or parathyroid deficiency need be expected.

County Societies**QUEENS-NASSAU MEDICAL SOCIETY.**

SEMI-ANNUAL MEETING, JAMAICA, N. Y.

TUESDAY, MAY 25, 1920.

The meeting, which was preceded by the mid-year dinner, was called to order at the Colonial Arms Hotel.

Owing to a growing feeling in the society that the time had arrived when the division of the present organization into two separate societies, one for each of the two counties, should be seriously considered, the secretary was instructed at the February meeting to send out a questionnaire to all the members of the society for the purpose of ascertaining the sentiment in regard to such action. The secretary reported a large majority of those who voted upon the question to be in favor of two societies.

In view of this result it was voted almost unanimously to separate into two county societies, to be known as the Medical Society of the County of Queens, and the Medical Society of the County of Nassau.

Dr. Thomas C. Chalmers, one of the delegates to the Medical Society of the State of New York, reported that the House of Delegates, at the annual meeting held last spring, had authorized the Council of the State Society to act favorably upon an application from the Queens-Nassau Medical Society for separation into two societies, when said society had taken favorable action upon such separation.

A committee consisting of President Jaques, Secretary Cooley, and Drs. L. Howard Moss, F. T. DeLano, and Thomas C. Chalmers was appointed to take the legal action necessary to effect such separation.

The present society to be dissolved at the end of the current year, December 31, 1920, and the new organizations to begin their corporate existence January 1, 1921.

SCIENTIFIC SESSION.

Joseph S. Lawrence, M.D., Chief of the Bureau of Venereal Diseases of the New York State Department of Health, gave a very valuable and instructive talk upon "The Need of More Accuracy in the Diagnosis of Syphilis."

Robert B. Greenough, M.D., Director of the Harvard Cancer Commission of Boston, Mass., gave a timely presentation of "The Relation of the Medical Profession to the Campaign for the Control of Cancer," illustrating several of his points with appropriate case histories.

Brief discussions followed these addresses and the meeting was pronounced one of the most successful of the year.

About forty physicians were in attendance from all parts of the two counties.

THE MEDICAL SOCIETY OF THE COUNTY OF TIOGA.

QUARTERLY MEETING, OWEGO, N. Y.

TUESDAY, JUNE 1, 1920.

The meeting was entirely given over to the subject of blood transfusion. Walter Sundblad, M.D., of the Robert Packer Hospital, Sayre, Pa., was present and gave an able address on the subject. He also demonstrated the various apparatus used for the different methods.

Donald Guthrie, M.D., Surgeon in Chief of the same institution, was also present, and led the discussion.

Several members reported cases.

ESSEX COUNTY MEDICAL SOCIETY.

SEMI-ANNUAL MEETING, ELIZABETHTOWN, N. Y.

TUESDAY, JUNE 1, 1920.

The meeting was called to order by the Secretary, at 2 P. M., at the Town Hall.

Owing to the President's being unavoidably detained out of town and the Vice-President having moved to another county, Dr. Thomas H. Canning, was elected Temporary Chairman. Eleven members and four guests were present.

The minutes of the previous meeting were read and approved.

The Secretary offered the following resolutions, which were unanimously adopted:

WHEREAS, Since last we met there has gone from among us one of our most loyal and devoted members, a man of sterling worth, whose long life of devotion to the needs of the sick and suffering has endeared him to his community and county, Dr. Melvin H. Turner of Ticonderoga, and

WHEREAS, In the death of Dr. Turner, this Society has lost one of its most steadfast members and the community a noble citizen; therefore, be it

Resolved, That the Essex County Medical Society hereby expresses to the family sincere sympathy and instructs the Secretary to publish in the county papers this resolution of respect as a testimonial of the high esteem in which it held Dr. Melvin H. Turner.

The subject of a pathological laboratory for Clinton and Essex Counties was discussed, but no action was taken.

SCIENTIFIC SESSION.

"Diseases of Adult Life, Focal Infections and the Value of Periodical Physical Examinations," Herman F. Senftner, M.D., New York State Department of Health, Buffalo.

"Original Method for Cæsarean Section," John P. J. Cummins, M.D., Ticonderoga.

"Intestinal Tuberculosis" (demonstrated by lantern slides), Mr. Homer Sampson, Roentgenologist, Adirondack Cottage Sanitarium, Trudeau.

"Foreign Bodies in the Eyeball, with Report of a Case," T. Avery Rogers, M.D., Plattsburgh.

"The Keene Valley Neighborhood House—a Community Effort in the Practice of Medicine," George E. Miller, M.D., Keene Valley.

A rising vote of thanks was extended to the speakers.

THE MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND.

QUARTERLY MEETING, PIERMONT, N. Y.

WEDNESDAY, JUNE 2, 1920.

The meeting was called to order in the Piermont Boat Club. Thirty-nine members and guests were present.

SCIENTIFIC SESSION.**Symposium on Heart Disease**

"The Use of Digitalis in Heart Disease, with Special Reference to the Electrocardiograph," John Wyckoff, M.D., New York. Dr. Wyckoff described the Eggleston method of rapid digitalization and exhibited lantern slides of electrocardiograms showing disturbances in rate and rhythm of the heart in various conditions, also the effect of digitalis on the heart's action.

"The Treatment of Advanced Heart Failure," Cary Eggleston, M.D., New York. This paper embraced a very comprehensive description of the general management of heart disease.

"Heart Disease in Relation to Chronic Arteriosclerosis," W. Ridgely Stone, M.D., New York. The various joint

diseases were mentioned as associated conditions with heart disease.

Discussion opened by Orrin S. Wightman, M.D., New York.

A rising vote of thanks was extended to the New York men for their kindness in presenting such interesting and instructive papers.

The meeting then adjourned, and the members and guests reassembled in the pavilion of the Fort Comfort Casino, where Dr. George A. Leitner acted as a most delightful and entertaining host. His cordiality and hospitality, as well as the famous clam chowder, were thoroughly enjoyed by all.

CHENANGO COUNTY MEDICAL SOCIETY.

SEMI-ANNUAL MEETING, SHERBURNE, N. Y.

TUESDAY, JUNE 8, 1920.

The meeting was held at the Brookside Crest Sanatorium, with the following program:

"Diseases and Focal Infections in Adult Life from the Standpoint of Preventive Medicine," H. T. Senftner, M.D., New York State Department of Health, Buffalo.

"Presentation of Tuberculosis Cases," Lewis A. Van Wagner, M.D., Sherburne.

MEDICAL SOCIETY OF CLINTON COUNTY.

SEMI-ANNUAL MEETING, PLATTSBURG, N. Y.

TUESDAY, MAY 18, 1920.

After a luncheon which was greatly enjoyed by all present the meeting was called to order in the Elks' Club House, Dr. A. A. de Grandpre, President, presiding. Members present: Drs. Briggs, Buck, Clough, de Grandpre, Everett, Fairbank, Ladue, La Rocque, McKinney, Macdonald, Ransom, Robinson, Rogers, Ross, Sartwell, Schiff, Silver, Taylor, Ryan, Reed. Visitors: Major Darby and Dr. Munson.

The minutes of the last meeting and of the comitia minora were read and approved as read.

The Secretary reported for the Committee on County Laboratory, stating that the matter had been put before the Board of Supervisors without definite result.

A new committee was appointed to take up the matter anew with the Board of Supervisors.

A Committee on Nominations reported the following: President, John R. Ross, M.D., Dannemora; Vice-President, William H. Ladue, M.D., Morrisonville; Secretary, Leo F. Schiff, M.D., Plattsburg; Treasurer, Jefferson G. McKinney, M.D., Plattsburg; Delegate to State Society, Arthur A. de Grandpre, M.D., Plattsburg; Alternate, Edwin W. Sartwell, M.D., Peru.

A committee was appointed to consider the matter of fixing a fee bill, to report at a special meeting to be called for that purpose.

Dr. John R. Ross, of the Dannemora State Hospital, offered the services of himself and staff in conducting Children's Mental Hygienic Clinics in different parts of the county, and also offered to aid physicians in nervous and mental cases if desired.

The Secretary was directed to notify physicians and teachers in the county of the privilege afforded by the offer of Dr. Ross.

SCIENTIFIC SESSION

Five Months of the Children's Mental Hygiene Clinic at Plattsburg, John R. Ross, M.D., Dannemora.

The Treatment of Syphilis by Salvarsan at the Dannemora State Hospital, T. D. Reed, M.D., Dannemora.

Diphtheria Carriers, William L. Munson, M.D., Granville.

Address by T. Avery Rogers, M.D., President of the Fourth District Branch.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

THE TREATMENT OF WOUNDS OF LUNG AND PLEURA. By Professor EUGENIO MORELLI, translated from the Italian by LINCOLN DAVIS and FREDERICK C. IRVING. W. M. Leonard, Publisher, Boston.

LIPPINCOTT'S NURSING MANUALS. A Nurse's Handbook of Obstetrics. By JOSEPH BROWN COOKE, M.D. Ninth Edition, revised and enlarged by CAROLYN E. GRAY, R.N., and PHILIP F. WILLIAMS, M.D. Published by J. B. Lippincott Company, Philadelphia. Price, \$3.00 net.

THE PROBLEM OF THE NERVOUS CHILD. By ELIDA EVANS. With an introduction by Dr. C. G. Jung of Zurich. Published by Dodd, Mead & Co., New York.

MANUAL PSYCHIATRY. Edited by AARON J. ROSANOFF, M.D., Clinical Director, Kings Park State Hospital, New York, Lieut-Col., Officers' Section, M.R.C., U.S.A. Fifth Edition, revised and enlarged. Published by John Wiley & Sons, Inc., New York and London.

A MANUAL OF FIRST AID IN ACCIDENT AND DISEASE. By EDWARD L. GAINSBURGH, M.D., Medical officer, U. S. Railroad Administration (Coastwise Steamship Lines). Published by Stearns & Beale, New York. Price, \$1.50.

STANDARD NOMENCLATURE OF DISEASES AND PATHOLOGICAL CONDITION, INJURIES AND POISONINGS FOR THE UNITED STATES. 1919. Published by the Department of Commerce, Bureau of the Census. Samuel L. Rogers, Director. Washington, D. C.

SIMPLIFIED INFANT FEEDING—WITH EIGHTY ILLUSTRATIVE CASES. By ROGER H. DENNETT, B.S., M.D. 14 illustrations. Second edition, revised and enlarged. Published by J. B. Lippincott Company, Philadelphia, Pa.

Book Reviews

AN INTRODUCTION TO GENERAL PHYSIOLOGY WITH PRACTICAL EXERCISES. By W. M. BAYLISS, M.A., D.Sc., F.R.S., Professor of General Physiology in University College, London. Published by Messrs. Longmans, Green & Co., New York. 1919. Price \$2.50 net.

This little book resembles its author's well-known treatise, the "Principles of General Physiology," in so many respects that its individuality is quite outstanding among elementary text-books on the subject. It is not, however, a compendium of the larger work, nor of anything else, but is quite *sui generis*. In its making, as in that of the treatise referred to, its author has endeavored to focus the student's attention upon *principles* rather than to merely present to him masses of detail with more or less disregard of their relevancy to fundamental concepts. For, like many other sincere teachers, he realizes the inadequacy of the common run of stated examinations as tests of the real knowledge acquired by students; and therefore, instead of attempting to furnish sufficient material for memorization in preparation for this or that anticipated examination he has wisely preferred brief, scientific discussion of a comparatively small body of data in relation to and on the basis of some of the deeply-rooted principles of present-day science, utilizing in these discussions the relevant data and generalizations of physics, chemistry, physical chemistry and morphology. Some idea of the book's scope may, perhaps, be con-

vayed by the following list of the chapter headings of Part I: "Life and Energy"; "Food-Digestion and Respiration"; "Work—The Muscles"; "Stimulation—The Senses"; "Adjustment—The Nervous System"; "Transport of Materials—The Vascular System"; "Growth and Reproduction." But an adequate estimate of its educational value can be gained only by actually using it in class-room as well as in laboratory. Part II, which comprises nearly a third of the printed matter, consists chiefly of well-thought-out suggestions and hints, rather than detailed directions for observational and experimental work, so arranged as to be serially utilizable in connection with the corresponding chapters of the text. Properly used, this book will not only prove helpful to the student in connection with his course work but will stimulate him to think and search for himself, than which there is no higher desideratum.

The good taste shown by the publishers in the entire make-up of the book, and especially the excellent press work, is worthy of high commendation. J. C. C.

PRINCIPLES AND PRACTICE OF PHYSICAL DIAGNOSIS. By JOHN C. DaCosta, Jr., M.D., Ex-Assoc. Professor Medicine, Jefferson Medical College, Philadelphia. Fourth Edition. Thoroughly revised. Octavo of 602 pages with 225 original illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, 4.75 net.

The fourth edition of DaCosta's well-known text book on Physical Diagnosis shows many alterations in the text and several important additions. These include a graphic description of the effects of the inhalation of poison gas, a brief description of gas pneumonia and of the pathology of influenzal pneumonia. The latter is included in a discussion of lobar pneumonia. It might perhaps more appropriately have been considered with the broncho pneumonias. Under the section devoted to tuberculosis is inserted an instructive description of hilus involvement.

Tests for the functional capacity of the heart have been added. The U. S. Army exercise test ("Lewis test"), the pulse pressure test, and the epinephrin test are described. A little more comment as to the use of these tests and their interpretation would not be amiss in a text book designed for students. For instance, a poor response to the hopping test may mean either a chronically damaged myocardium, a temporarily depressed myocardium, or a constitutional defect known variously as N. C. A. effort syndrome, etc. The reader would infer from the text that all such cases come under the latter category. The inference that Lewis classifies V. D. H. (valvular heart disease) as one variety of "effort syndrome" is surely due to a misprint.

The comments on the significance of alterations in blood pressure due to exercise and change of posture suggest the query whether there are not too many exceptions to justify their inclusion in such a work. The systolic pressure of many athletes will remain undisturbed by quite violent exercise. A fall in pressure on changing from the recumbent to the erect position is so common a phenomenon that some observers consider it the normal physiological response.

The article on "Soldier's Heart" furnishes the largest single addition to the book. It is gratifying to have this important subject finding a place in a modern text book, for the condition is very common in civil life. Dr. DaCosta appropriately sticks to the old name "Soldier's Heart" which was given to the symptom complex by J. M. DaCosta in 1871. A clear, concise picture of the condition is presented, its differentiation from organic heart disease being clearly drawn.

Other additions include a consideration of improvements in sphygmomanometry and estimation of intra-dural pressure, and a description of cecum mobile.

T. H.

EVERYDAY GREEK. Greek Words in English, including Scientific Terms. By HORACE ADDISON HOFFMAN. 107 pages. Chicago, University of Chicago Press, 1919.

This would seem to be a valuable aid to either the student of medicine or the practitioner in arriving at a correct understanding of the many Greek terms or terminations encountered in the various branches of medical study.

While not intended solely for medical students, the author explains the preponderance of medical terms in the text by the fact that this science has handed down and retained more Greek forms and meanings than any other, and that, lastly, many of these medical terms have come into general use and belong to everyday language of educated people.

In a small compass a surprisingly comprehensive outline of the subject is presented, and even the former college student of the Greek language will by its perusal have his memory refreshed.

W. H. DONNELLY.

THE DISEASES OF INFANTS AND CHILDREN. By J. P. CROZER GRIFFITH, M.D., Ph.D. Two octavo volumes of 1,542 pages. Illustrated. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$16.00.

This is an excellent example of the one-man book; not only has Dr. Griffith had excellent opportunities for observation for a long time, but he has taken full advantage of those opportunities. The result is a book which contains a large mass of well-digested personal experience. This does not mean that the writer has not profited by the experiences of others; he has read widely and has incorporated into his work whatever of value he has thought appropriate; one of the rather novel elements in the book is the frequent reference in the foot-notes to the original writings, enabling the reader to make fuller study as he may desire.

The book is large, over 1,500 pages but it is not padded, the pages are full, type of the right size, making easy reading but not unduly spaced. The illustrations are good and mostly original; it is not over-illustrated and perhaps an occasional subject could be more fully elucidated by more pictures, but this is a matter of judgment. Weights and measures and doses are expressed both in English and metric systems.

While one may find details in which he disagrees with the writer, including items in the broad and controversial sphere of feeding, the advice given throughout the book can be confidently recommended as safe and conservative. Altogether the impression given is very pleasing.

W. D. L.

ORTHOPEDIC AND RECONSTRUCTION SURGERY, INDUSTRIAL AND CIVILIAN. By FRED H. ALBEE, M.D., F.A.C.S., Prof. and Director Department of Orthopedic Surgery at the New York Post-Graduate Medical School. Octavo volume of 1,138 pages; 804 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth, \$11.00 net.

In this new work on orthopedic surgery we have a valuable addition to the literature on this subject. Not only has the author gone deeply into each subject presented, but he has given us the most valuable references on the subject treated, thus showing a tremendous amount of work in going over the literature.

We have a splendid opportunity of studying the authors technique on bone surgery. This indeed might be called pioneer work in this special field and his many devices are quite ingenious.

A large part of this work might be said to be a direct result of the recent war and the many orthopedic problems involved are well brought out.

The book is well written and will be welcomed by general as well as orthopedic surgeons.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number III. (The Mayo Clinic Number, November, 1919.) Octavo of 296 pages. 79 Illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly. Price per Clinic year: Paper, \$12.00. Cloth, \$16.00.

This issue maintains the standard of these publications. The field covered is extensive and includes conditions involving surgery as well as internal medicine. The articles treating of the thyroid gland—its secretion and treatment of abnormal conditions are comprehensive and clear some of the difficulties found in diseased conditions of this gland. The subject of blood transfusion is thoroughly reviewed and cases reported. Each article is in itself a complete, thorough study of the case under consideration, and each is ably presented. The careful methods pursued as the Mayo Clinic are here outlined. H. M. M.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume III, Number IV. (The Boston Number, January, 1920.) Octavo of 316 pages, 43 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly. Price per clinic year: Paper, \$12.00. Cloth, \$16.00.

There are seventeen articles in the present number of which ten are clinics from the Massachusetts General Hospital. The material is so well prepared and presented that it is difficult to pick out for special mention any group of papers contained in this issue.

Without slighting in any way the other articles, one might mention as worthy of particular attention one on Diabetes by Dr. Elliott P. Joslin, one on Asthma, Hay-Fever and Allied Conditions by Dr. Francis M. Rackemann, and a third on Whooping Cough by Dr. Fritz B. Talbot.

This series of Clinics from its inception is to be commended for the uniformly, scientific character of its subject matter, and for its policy of presenting, in an authoritative manner by clinicians of established standing, material of interest to the general practitioner as well as the internist. W. H. DONNELLY.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By E. W. ROCKWOOD, M.D., Ph.D., Professor of Chemistry and Toxicology in the University of Iowa. Fourth Edition. F. A. Davis Company, Philadelphia, 1919. xvi+316 pp., 17 Figs.

This text is intended primarily for beginners in the subject of physiological chemistry and follows in general the usual lines for such texts. Physiological chemistry, as every one knows, is more widely taught at the present time than ever before. In the words of the author: "Although a few years ago physiological chemistry was almost entirely confined to medical curricula, it is now included not only in such courses as dentistry and pharmacy, but in those of normal, scientific and industrial colleges, and of schools of home economics and domestic science."

The author has evidently attempted to write a text that might appeal to many types of students. He uses very clear and simple language in describing the subject-matter, and he takes very little knowledge for granted on the part of the student. His directions for the experiments conform to good analytical practice, being sufficiently detailed to offer (the student) little opportunity for going astray, and thus enabling him to work successfully without an undue amount of personal supervision.

Most of the topics, such as the carbohydrates, proteins, digestion, blood and urine are treated quite extensively, but the data on "lipoids" and brain are too meager for medical students. The standard methods used in modern clinical medicine are given very satisfactorily.

On the whole, the text is suitable for the average beginner in physiological chemistry, but does not meet the needs of advanced medical students nor men engaged in research. MATTHEW STEEL.

THE TREATMENT OF SYPHILIS. By H. SHERIDAN BAKETEL, A.M., M.D. Published by the MacMillan Company, New York City, 1920. Price, \$2.50.

In this small volume Dr. Baketel presents the subject of the modern treatment of lues and all its manifestations. The book is elementary and to the point and therefore intended more especially for the general practitioner who undertakes the treatment of this disease. If all would follow the methods as laid down in this work, the results would be gratifying indeed.

The author has an excellent way of emphasizing important statements by lines of heavier type.

Where there is a difference of opinion, eminent authorities on both sides are quoted, without prejudice, *e. g.*, salvarsan vs. neo-salvarsan, or treatment of spinal syphilis. A "course" of treatment for an acute case is similar to that adopted by most syphilographers. The author favors the bichloride of mercury for intramuscular use over other preparations, thirty-six injections comprising a "course."

The causes of reaction from salvarsan are carefully reviewed. Dr. McCoy's dictum (U. S. P. H. S.), in reference to dilution and time of administration has now become known to all through directions contained with every vial. The reviewer believes further that the instructions for mixing should call for the addition of one-third excess alkali in neutralizing, to insure formation of the Di-sodium salt. The importance of this in point of toxicity has been demonstrated by Dr. C. N. Myers.

The point of Dr. Fordyce in regard to old spinal cases re-infecting the blood is well taken.

To illustrate one Urologist's confidence in salvarsan as a prophylactic, Dr. A. G. Magian, of the French Hospital in Manchester, allowed himself to be injected with the serum from a chancre. Shortly after, salvarsan was injected and the blood Wassermann followed for a period of a year. AUGUSTUS HARRIS.

THE SURGICAL CLINICS OF CHICAGO. Volume IV, Number I, (February, 1920). Octavo of 231 pages, 83 illustrations. Philadelphia and London: W. B. Saunders Company, 1920. Published Bi-monthly: Price, per year: Paper, \$12.00. Cloth, \$16.00.

The contributors to this number form a roster containing most of the best known surgeons of Chicago. Andrews, Beck, Bevan, Eisendrath, McArthur, Kreuscher, and Speed are a few of them.

The entire volume is an exceptionally interesting one. Bevan's discussion of imperforate anus is clear, concise and instructive.

One of the most valuable articles is that of Strauss on Congenital Pyloric Obstruction. One cannot lightly set aside his conclusions, for he has operated upon 103 cases with only 3 deaths and has treated 55 cases medically. He lays especial emphasis upon the value of fluoroscopy in determining which are medical and which are surgical cases. HENRY F. GRAHAM.

FOOD FOR THE SICK AND THE WELL, How to Select It and How to Cook It. By MARGARET P. THOMPSON, Registered Nurse. Cloth, ix+82 pages. Price, \$1.00. Yonkers-on-Hudson, New York: World Book Company, 1920.

Apart from a few pages on food and health, a balanced menu, and suggestions and cautions at the beginning, and on treatments at the end, the text of this unusually condensed little volume is taken up with recipes for the preparing of food, more especially for the sick.

It pretends to be nothing more than such a list of recipes and the only claim made is that these are the culmination of years of experience in planning, varying and balancing diets for the sick, the convalescent and the well.

As such then it merits a place in the literature on the subject. W. H. DONNELLY.

REPORT ON MEDICAL AND SURGICAL DEVELOPMENTS OF THE WAR. By WILLIAM SEAMAN BAINBRIDGE, Lieut. Commander, Medical Corps, U. S. Naval Reserve Force. Special Number—United States Naval Medical Bulletin, January, 1919. 250 pages. Washington, Government Printing Office.

This is an exhaustive and illuminating report, and records a survey of the surgical lessons of the World War, based on the experiences of our Allies. Here are presented observations on the Western front and in England during December, 1917, and the first six months of 1918, which were made by Dr. Bainbridge and calculated to be of value to the United States Naval Medical School and helpful in the preparation of medical men for active service. These observations were made in accordance with instructions issued by the Surgeon General of the Navy.

The sources of information are British, French, Belgian and those American surgeons who were in active service before the United States entered the War.

The report incorporates the following considerations: Treatment of War Wounds, Developments in War Surgery. Care of the Wounded from the Firing Line to the Convalescent Camp and the Re-education of the Disabled. Considerable data for purpose of comparison is included relative to German methods of treatment obtained during the autumn of 1915. This is striking. The German machine had organized its medical department in a very efficient manner. Chaotic conditions of the Allies, in comparison was appalling.

The report comprises 250 pages, includes many illustrations, and no doubt has served a very useful purpose.

B. H. FOWLER.

THE WHOLE TRUTH ABOUT ALCOHOL. By GEORGE ELLIOT FLINT. With an introduction by Dr. ABRAHAM JACOBI. Published by the Macmillan Co.: New York, 1919. Price, \$1.50.

A book on a live topic. The *J. A. M. A.* says of it: "Half is unprintable and the rest unspeakable." Dr. Jacobi in the introduction feels he should be able to judge its merits impartially because, contrary to his custom, he has not used any alcohol for several months. The author is a son of the late Austin Flint, is forty-six years of age; he has had twenty-eight years' experience in using both liquor (ale) and strong cigars without any impairment of either his mental or physical powers. He is "therefore able to refute by absolute counterfactuals such statements as 'alcohol in moderate quantity reduces efficiency, destroys energy, weakens thought, paralyzes physical endurance, and lowers enormously the whole muscular tone'" (p. 254). Alcohol does not ruin men—men disgrace alcohol (p. 34). Practically the whole world drinks, and drunkards are in the minority. Our sensations tell us when we have had enough (p. 144). Drunkards without exception have some brain defect (p. 144). Parents who are not organically defective care for their children and do not drink to excess (p. 201). Only the stronger liquors are habit-forming (pp. 115, 47). There are no beer drunkards (p. 15). Water, so much needed, must be made palatable by the addition of alcohol (pp. 14, 101). The blood vessels and heart may be ruined by daily increments of water (p. 211). Alcohol is a constituent of the body and is formed in the fermentation of sugar and starch (pp. 101, 85, et al.); and total abstainers are usually candy-eaters probably because a part of their systemic need is alcohol (p. 102). Alcohol is a sedative (p. 105) and reduces brain efficiency (p. 106). The Germans worry less than the Americans. Is it that German beer quiets German worry (p. 107)? But it is also a stimulant and a narcotic; it conduces to sociability and breaks down restraint (p. 111). It is not unlikely that the desire for intoxicants is connected also with sexual desire (p. 6). Whenever an invading army finds drink easily accessible, the danger to conquered civilians is always greater; and more

rapes . . . occur than when the soldiers remain sober (p. 93). Alcohol is a life-saver in severe infections (quoting five pages from the writer of the introduction) and in serious cases of gripe-pneumonia (p. 124, quoting an emeritus professor). Abstainers live longer because they are more likely to be more careful of their health generally . . . and live on a low plane; and a low plane may mean a long life (p. 165). Some turtles live for hundreds of years, but who would be a turtle (p. 166)? Moderate indulgence in the lighter alcoholic beverages acts as a preventive of cancer and tuberculosis (pp. 226, 223), for moderate drinkers are usually well nourished and strong; look at the sturdy Germans who have drunk beer from early childhood (p. 168). Neither crime, disease nor poverty is due in any large measure to alcohol. Beer is liquid bread (p. 142). Alcohol is a sort of substitute for food (p. 179). There is a pathetic inquiry on p. 35 addressed to the reader which is a gem; it should be read the very first. To tell the "whole truth" about alcohol requires qualities which the author possesses in some limited measure, and rather more than 277 pages of a wide margin 8vo long-primer type book, at the dirt-cheap price of \$1.50.

A. F. E.

DISEASES OF NUTRITION AND INFANT FEEDING. By JOHN LOVETT MORSE, A.M., M.D., and FRITZ B. TALBOT, A.B., M.D. Second edition revised. Published by the Macmillan Company, New York, 1920.

This is the second edition of the work, bringing the literature up to April, 1918, and follows the same lines as the first edition which appeared in 1915.

The writers are so well and deservedly known in the field of pediatrics that anything coming from them commands attention and their views must be received with great respect.

There are five sections in the text, namely: Physiology and Metabolism; Breast Feeding; Artificial Feeding; Diseases of the Gastro-intestinal Canal; and Diseases of Nutrition.

As a reference work of small, compact size it is invaluable, as the literature is freely quoted, and the original references are fully and carefully given; in fact, it is so full of scientific data and references as to make somewhat difficult reading for the general practitioner.

There is no attempt in the consideration of infant feeding to give way to the modern trend toward simplification of methods and formulæ; while under the head of diseases of nutrition it might seem that something could have been said regarding the vital subject of malnutrition, in which field the Boston pediatricians were pioneers.

Nevertheless, this is a treatise of unquestioned scientific value, and one which must be read by every one who wishes to keep abreast of the times in pediatric literature.

W. H. DONNELLY.

Deaths

GEORGE D. BRADFORD, M.D., Homer, died April 24, 1920.

MAX C. BREUER, M.D., Buffalo, died May 19, 1920.

RICHARD W. MULLER, M.D., New York City, died June 3, 1920.

GEORGE MORTIMER SNOOK, M.D., Parma, died April 16, 1920.

EDITH W. STEWART, M.D., Hume, died May 16, 1920.

HENRY WEIL, M.D., New York City, died May 30, 1920.

WILLIAM HENRY WOODBURY, M.D., Buffalo, died May 8, 1920.

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EDITORIAL DEPARTMENT

PHYSICIANS' INCOMES.

THE question of the Practice of Medicine as a business is one so frequently referred to, and one of which so little is actually known, that the facts collected by the Committee on Medical Economics of the State Society should be of general interest.

Two years ago a questionnaire was sent out by the Committee to every member of the State Society. The object was to obtain accurate information concerning physicians' incomes and the actual expenses of practice, and also to ascertain the amount of time given without compensation to hospital and college work. The questionnaires were arranged so that each physician might designate whether he were a general practitioner or a specialist or an institution worker. If a specialist, he was to state whether his whole time were devoted to his specialty, or whether he combined general practice with his special work. If he devoted only a part of his time to special work he was classified as a "part-time" specialist. The incomes stated were to include only actual collections, not amounts charged.

The number of questionnaires returned fully answered was very gratifying. A few resented what they evidently considered prying into their personal affairs, and one or two took the opportunity to criticise the Committee.

The Committee welcomed the criticism, as it always does, but did not consider that the accusation of prying was merited because the questionnaires were so arranged that the Committee had no way of identifying the individuals returning them.

As the questionnaires came in it was considered desirable to group the physicians according to the size of the communities in which they lived. A somewhat arbitrary division was made,

New York and Brooklyn being separated and cities of over one hundred thousand population being called cities of the second class; those with population between fifty and one hundred thousand, cities of the third class; and those with population of less than fifty thousand, cities of the fourth class. Towns and villages were divided into large and small.

The data of the Committee are as follows:

In New York City the incomes from general practice averaged \$5,876.92, and the expenses \$2,355.63; specialists earned \$12,717.50, with expenses of \$4,280.42, and "part-time" specialists \$9,022.71, expending \$3,183.23. The average number of hours given each week without compensation were 10 by the general practitioner, 14.1 by the specialists, and 15.6 by the "part-time" specialists. In Brooklyn the incomes from general practice averaged \$5,691.35, expenses \$2,161.72; specialists, \$11,691.43 with expenses of \$3,286.80, "part-time" specialists \$6,269.07, expenses \$2,102.90. The average number of hours given weekly, without compensation, was 7 5/8 by the general practitioners, 15 2/7 by the specialists, and 10 1/2 by the "part-time" specialists.

In the second class cities the general practitioner received an average of \$3,635.55, with an expense of \$1,853.58; specialists, \$8,604.16, with expenses of \$2,502.38; "part-time" specialists \$9,037.50, with \$3,011.75 expenses.

The general practitioners in this group of cities gave 3 1/4 hours per week without compensation, the specialists gave 9 1/2 hours, and the "part-time" specialists 4 1/4 hours.

Incomes in the third class cities derived from general practice were \$3,554.34, with expenses of \$1,004.00. The specialists received \$6,439.00, with expenses \$3,375.00 and the "part-time" specialist \$10,745, with expenses of \$3,687.50.

The time given weekly without compensation was $3 \frac{2}{3}$ hours by the general practitioners, 7 hours by the specialists, and 6 hours by the "part-time" specialists.

In the fourth class cities general practitioners received \$4,766.40, with expenses \$1,752.70; the specialists received \$9,101.47, with expenses \$3,774.86 and the "part-time" specialists \$8,544.33, with expenses of \$2,759.18. General practitioners in the group gave $7 \frac{1}{2}$ hours weekly, without compensation; specialists $9 \frac{3}{4}$ hours, and "part-time" specialists $8 \frac{1}{2}$ hours.

Incomes from general practice in the large towns averaged \$5,275.88, with expenses of \$1,729.96. Specialists received \$6,175.00, with expenses of \$2,700.00, and "part-time" specialists \$6,776.33, with expenses \$2,078.75. The average number of hours given weekly without compensation by this group were: $7 \frac{1}{10}$ by general practitioners, 15 by specialists, and $10 \frac{1}{15}$ by "part-time" specialists.

The small town general practitioner received \$3,419.68, with expenses of \$1,222.26; the specialists \$3,575.00, with expenses of \$1,125, and the "part-time" specialists \$4,666.66, with expenses of \$1,466.66. The average number of hours given weekly without compensation were: $3 \frac{3}{4}$ by general practitioners; $12 \frac{1}{2}$ by specialists, and $8 \frac{1}{2}$ by "part-time" specialists.

Institutional workers earned on an average \$4,002.01, with an expense of \$660.50, and gave, without compensation, $4 \frac{3}{5}$ hours per week.

As would be expected, the proportionate number of specialists decreased rapidly in cities of the fourth class and in the towns. Throughout the entire lists, including New York City, the number of "part-time" specialists was larger than the number giving their entire time to one special line of work.

Numerous interesting deductions may be drawn from these figures, and not the least important is that considering the time and money outlay necessary to acquire the right to practise medicine the financial rewards are not favorably comparable with those of other lines of endeavor. It is true, however, that here, as elsewhere, when we deal with averages, we reckon with giants as well as with dwarfs, and the Committee's returns show several incomes of \$90,000 to \$125,000 per year, so that the practice of medicine need not be wholly unattractive, even to the man who estimates success merely by dollars.

The general ratio of income to expense is fairly well maintained throughout these data and may be reasonably accepted as final.

In New York City and Brooklyn the specialist wins the largest reward, while throughout the State men who are engaged in general work and at the same time specialize in some branch of medicine earn the largest incomes.

It would appear that this comparative financial advantage of the "part-time" specialist is indica-

tive of a healthy condition of the practice of medicine.

The men so engaged are unquestionably meeting necessities which are arising with the growth of medicine. The criticisms offered by the proponents of certain kinds of social insurance that the public is not getting satisfactory medical service cannot be met in a more convincing way than by this statistical finding.

The foregoing is a *résumé* of work done and the detail will be a part of a subsequent report by the Committee on Medical Economics.

HENRY LYLE WINTER.

EXCESSIVE STANDARDIZATION.

STANDARDIZATION in products and in methods has doubtless been the keynote of American industrial and technical success. While this has often led to greater or lesser suppression of individualism, it has in the main resulted in the betterment of the whole.

In an address by Franklin K. Lane, after he was recently granted an honorary degree of Doctor of Laws by Harvard University, he warned the country against over-industrialism and over-standardization, declaring that men of business have run mad and fostered standardization in trade and industry until the workman finds no chance for the expression of his own individual genius.

The late John Murphy, of Chicago, in an after-dinner address during a session of the American Congress of Surgeons in New York some years ago, called attention to the same thing, not only in medical education, but in the whole scholastic education of our children, and for this reason was a staunch supporter of the Gary system. He, too, maintained that excessive standardization suppresses individualism, dwarfs genius and creates a standard doctor with consequent decreasing instances of development of individual unusual talents. He believed that the medical school of several decades ago fostered individualism, which resulted in relatively larger numbers of men with unique ability.

If these are facts, they should not fail to influence for the better the broad plans in this period of reconstruction for the future development of American professional education and of American industry managed by men of outstanding ability in the large affairs of today. There is doubtless a very great demand for the standardized product, but there is also a considerable demand for a product distinctly outside the standardized class and quality. It has been said that the separate endowment of men varying in intelligence, ingenuity and balanced judgment is a necessary constituent in the ore of mankind; to subject all this varying ore to the same process of reduction, to attempt to fit all men's powers into a Procrustean standard, is to attack common sense and to waste opportunity.

Original Articles

DIETETIC TREATMENT OF DISEASES OF THE UPPER GASTRO-INTESTINAL TRACT.*

By ARTHUR F. CHACE, A.M., M.D.,
NEW YORK CITY.

IN order properly to consider the dietetic treatment of diseases of the digestive tract, it is necessary to review its normal anatomy and physiology, in the light of new investigations, particularly as regards the functions of its secretory and motor mechanisms.

We know now that the cardiac portion of the stomach acts as a food reservoir where salivary digestion continues—i. e., after a balanced properly masticated meal the contents of this chamber are subjected mainly to the action of ptyalin. Tonic contraction, which creates a difference in pressure relations in the abdominal cavity, passes the food from the cardiac sac, the source of the peristaltic waves, toward the pyloric portion where, after a brief stage of salivary digestion, the active gastric digestion takes place. Here the food undergoes repeated compression by means of these peristaltic waves, which would seem to be related, temporally or otherwise, to the secretion of the gastric juice. It is only as the contents of the fundus become acid that the stomach contents, as a whole, receive uniform treatment. The muscular activity differs at the two ends of the stomach; so much so, that it was at one time supposed that performance of the motor function was restricted practically to the pyloric chamber, no heed then being given to the diaphragmatic or respiratory muscular contractions occurring in the cardiac sac, by reason of its peculiar anatomical location.

The functions of the stomach are then: (1) to act as a receptacle for ingested food; and (2) to mix the food with secretions (peptic digestion) and propel this altered substance onward. At first the entire stomach participates in the first function, but later this is chiefly performed by the cardiac sac, which gives forth its contents a little at a time, as the mixing mechanism of the pyloric end is ready to receive it. Here, two functions obtain—that of mixing the food with gastric juice while the pylorus is closed, and of expelling it into the duodenum when the pylorus is open—the gastric peristaltic waves stopping at the pylorus.

These separate functions of the cardiac and pyloric portions of the stomach were brought out by the brilliant investigations of Dr. Cannon,† who found that after an hour and a half

of gastric peristalsis, food in the cardiac sac had the same appearance as upon ingestion, while contents in the pyloric chamber, the seat of peristaltic waves, were changed in consistency to a thickish mush, so that it may safely be assumed that peptic digestion occurs only in the pyloric end. Furthermore, it was found that if the empty stomach was in a state of tonic contraction, peristalsis occurred immediately upon the introduction of food, and continued uninterruptedly until the stomach was clear of its contents, the number of waves during a single period of digestion being greater than was commonly supposed. The emptying of the stomach occurred simultaneously with gastric digestion, and not at the end of the process; that is to say, progressively and not suddenly, and the chyme was expressed through the pylorus at irregular intervals, which Dr. Cannon* placed at from ten to eighty seconds.

Experiments have shown that fat emerges from the stomach so slowly that its amount in the small intestine at any given time is fairly constant in quantity and relatively slight in amount. Carbohydrates, on the other hand, pass from the stomach rapidly, particularly in early digestion. Cannon,† in his studies, saw bread in the duodenum about ten minutes after feeding. The small intestine, therefore, receives a large carbohydrate bulk in a relatively short time, and here it may be remembered that carbohydrates are not digested by the gastric juice. Proteins, which are digested by the gastric juice, are not discharged to any considerable degree for half an hour or more. In nine out of sixteen of Cannon's‡ cases, no food had passed from the stomach at the end of the first half hour, and in eight cases the small intestine had received only four centimeters of food at the end of an hour.

In mixtures (fat with protein) the protein leaves the stomach more slowly than it would by itself, which is evidently the result of the presence of fat. In uniting fats with carbohydrates, the discharge from the stomach is at first more rapid than normal for the carbohydrates utilized. Subsequently, the fats have a retarding effect, though not as great as is obtainable when fat is added to protein. A mixture of protein and carbohydrates does not leave the stomach as slowly as the protein, or as rapidly as the carbohydrates alone. Here it may be stated that the passage of carbohydrates is not halted when fed first in the combination, but if protein is the first element given, it does hold back the carbohydrate. It has also been observed that the average rate of peristalsis increased from fats to proteins and from proteins to carbohydrates.

To explain the differential discharge of various

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 25, 1920.

† Cannon, Walter B.: "The Mechanical Factors of Digestion," p. 64. (Longmans & Company.)

* Cannon, Walter B.: "The Mechanical Factors of Digestion," p. 96.

† *Ibid.*, p. 90.

‡ *Ibid.*, p. 91.

foodstuffs, Dr. Cannon* propounded a theory of acid control of the pylorus, that is, that acid on the stomach side of the pyloric sphincter causes a relaxation of that orifice, while acid in the duodenum closes the pylorus. Many valuable experimental studies were made by him to corroborate this theory. Of course, we all know that compensatory changes in the pyloric reflex are known to attend various pathological conditions, although Cannon† quite correctly asserts that such adaptation does not constitute an argument in disfavor of the theory of pyloric acid control.

Rehfuss, Hawk and others,‡ recently conducted a series of unique experiments in an endeavor to ascertain the gastric response to different foodstuffs—i. e., milk, eggs variously prepared, beef and beef products, pork and pork products, and lamb and lamb products. The fractional method of gastric analysis was used. Their results are of great interest and value.

It was found that milk, drunk rapidly, left the stomach sooner and produced a smaller curd mass than milk drunk slowly or sipped; that raw, whole milk formed firm, white, rubber-like curds, the maximum curding occurring about one hour after the milk had entered the stomach. Milk which had been boiled five minutes formed small, soft, flaky curds which left the stomach sooner and were more digestible. It was concluded, therefore, that, dietetically, boiled milk was to be preferred to the raw product.

Eggs created less stimulation of gastric secretion than meats, and left the stomach sooner. The average of the highest acidities developed in the egg experiments was 80; in general, they showed high combined acidities through the early period of digestion.

With beef products the average evacuation time of 2 hours and 35 minutes was obtained in individuals with rapid-emptying stomachs, and of 3 hours and 25 minutes in those of the slow-emptying type. The average total acidity at the height of digestion was 120.

Pork products showed an average evacuation time of $2\frac{3}{4}$ hours for rapid-emptying stomachs, and 3 hours and 40 minutes for the slow-emptying. The average total acidity was 117.

Lamb was found to require an average of $2\frac{1}{2}$ hours for the rapid-emptying stomach, and 3 to 4 hours for the slow-emptying. It stimulated acid production to a slightly greater extent than either beef or pork. The average total acidity was 134 at the height of digestion.

On the basis of these studies, the authors suggest that a revision of the older ideas of hyperacidity might be in order.

Having well in mind all these physiological facts regarding normal digestion, we may proceed

to a consideration of the basic functional disturbances, and their dietetic treatment—hyperchlorhydria, subacidity, myasthenia gastrica, and organic lesions of the stomach.

Hyperchlorhydria.—This is a gastric disorder in which the secretory glands of the stomach, in response to the stimulus of ingesta, elaborate a gastric juice so rich in acid and ferments as to produce symptoms. Pawlow showed, by his experiments on dogs, that the mere introduction of food into the stomach was insufficient to excite the gastric glands to activity, but that a combined psychical and physical stimulus was necessary.

Hyperchlorhydria should not be confused with gastrosuccorhea in which an excess of gastric juice is secreted without any reference to the ingestion of food, and which, consequently, may be found in large quantities in the stomach at almost any time during the twenty-four hours. This is a much more serious affection than hyperchlorhydria and may develop from it. Again, there are certain cases in which, in addition to the qualitative change, the amount of gastric secretion is increased.

The ideal diet is one which produces the minimum stimulating effect on secretion, and combines with the maximum amount of hydrochloric acid. The protein found in cereals and vegetables, egg-albumin, milk, and well-cooked meats containing few extractives, such as the white meat of chicken, the white meat of fish, lamb, or sweetbreads, answers the purpose very well. The diet should be largely protein, but in the case of animal protein the juices should be entirely removed by thoroughly cooking or boiling to such a point that all meat extractives have been eliminated. If roast beef is given, it should have the juice cooked out of it, and should not be basted during preparation. In order to maintain nutrition fats and carbohydrates must be given, the former not only tending to inhibit the secretion of gastric juice, but acting as a sedative to the mucosa and exerting a beneficial effect by counteracting the tendency to constipation. Almond or olive oil, before meals, and unsalted butter with the meals, are very good forms in which to administer fats. Of course, butter, cereals, cream and oil are eliminated in obese patients.

Highly seasoned foods, salads, condiments, appetizers, alcohol in any form, steaks and chops rich in xanthin bases, salted meats, or even salt (as this is the basis for the formation of hydrochloric acid), uncooked fruits and vegetables with their content of acetic, citric and tartaric acid, which irritate the hyperesthetic mucous membrane and increase the secretion of hydrochloric acid, and, above all, the sugars should be avoided. This latter foodstuff is perhaps responsible for producing more hyperacidity than any other single article of diet, and the great increase in the prevalence of hyperacidity during the last decade, is largely due to increased sugar

* Cannon, Walter B.: "The Mechanical Factors of Digestion," p. 96.

† *Ibid.*, p. 128.

‡ Rehfuss, Hawk, et al.: *American Journal of Physiology*, Vol. 48, 1919, pp. 411-418; Vol. 49, 1919, pp. 174-270.

consumption. All by-products of sugar, such as honey, syrups, marmalades and preserves, have also been found, in our experience, to increase the distress and pyrosis after meals. Their irritating action on the gastric mucosa, possibly by osmosis, more than offsets any beneficial effect they might have upon secretion.

The prompt appearance of large amounts of hydrochloric acid after the ingestion of food, in hyperchlorhydria, checks the ptyalin digestion of starches, and, as a result, dextrin is found in the stomach after a test-meal. Normally, the starches should be digested by the ptyalin ferment to maltose. Because of this interference with salivary digestion, foods containing large amounts of starches should be given in moderation. Bread should be partially dextrinized by being twice baked or toasted. Only finely divided cereals, such as cream of wheat, hominy, rice or farina are advisable. Boiled rice is particularly good. It is better to take these foods with butter than with sugar. Parenthetically, it might be mentioned that oatmeal, owing to its content of *avena sativa*, stimulates gastric secretion, and some of the severest cases of hyperchlorhydria are caused by eating oatmeal, sugar and cream for breakfast.

Although food should be thoroughly salivated and broken up before swallowing, it must not be forgotten that the act of chewing stimulates gastric secretion. Many patients suffering from hyperchlorhydria have acquired the habit of eating light breakfasts and lunches and large dinners. It is very desirable to distribute more evenly the amount of food taken at each meal, often going so far as to give nourishment six times a day, in small quantities, so as to prevent the accumulation of free gastric juice in the stomach.

In cases of continued secretion of gastric juice, substantially the same dietary combinations are in order, but additional resort to proper drug therapy, hydrotherapy and rest becomes necessary in order to control it.

Following is a tabulated diet containing the essential food elements and arranged so as to supply adequate caloric needs in cases of hyperchlorhydria:

Breakfast.

Stewed prunes or a baked apple (cooked without sugar); well-cooked cereal, such as oatmeal, cream of wheat, farina, or wheatena, with butter or cream (no sugar); stale bread or toast with butter, cup of Kaffee Hag or cocoa with cream (no sugar).

Luncheon.

Choice of:

Boiled rice with butter or cream, shredded wheat biscuit, poached eggs on toast, rice pudding, cup custard, baked apple (without sugar), stale bread or toast with butter, cup of Kaffee Hag or cocoa with cream (no sugar).

Dinner.

Choice of:

Creamed soups; roasted beef, lamb, chicken, broiled fish or lamb chop; any of the following well-mashed vegetables: peas, string beans, spinach, carrots, squash, potato, boiled rice, creamed spaghetti or macaroni; stewed prunes or baked apple (without sugar), cup custard, stale bread or toast with butter; cup of cocoa or a glass of buttermilk.

Note: In severe cases, it is necessary to take less nourishment at meal time, and to supplement the diet by intermittent feedings between meals and at bedtime. These feedings should consist of a cup of cocoa without sugar, or a glass of milk or cream and vichy, or milk and limewater, with zweiback and butter or stale bread and butter.

In all cases, coffee, tea, alcohol, tobacco, spices, sweets, sugar, candy, soda water, and condiments of any kind are interdicted, and not more than one glass of liquid should be given with meals.

Subacidity.—This is a gastric disturbance in which the secretory glands of the stomach elaborate a gastric juice so deficient in acid and ferment properties as to be unable to functionate properly in caring for ingested food.

Its etiology, symptomatology and diagnosis, with the aid of necessary test-meals and acid reactions, are so well known to all that it is perhaps unnecessary to dilate upon them. The disorder is most commonly associated with gastric malignancies.

Two points, apart from the diet proper, may here be emphasized: (1) that all food should be thoroughly insalivated before swallowing, since chewing augments the gastric secretion; and (2) that it is particularly advisable, in these cases, to utilize any psychical secretion of gastric juice that may be available by preparing the food in such a way as to make it most palatable to the patient.

The diet should be so combined as to largely include those substances which stimulate gastric secretion, and, at the same time, require the minimum amount necessary for digestive purposes. Meat extractives and seasoned foods are here in order, although the amount of protein should be greatly reduced, and sufficient carbohydrates in the form of well-cooked cereals, puréed vegetables, and specially prepared breadstuffs should be given to offset any deficiency in the amount of protein.

In cases of atrophic gastritis, where there is an entire absence of gastric juice, the dietetic principles in use in subacidity must be applied with greater accuracy, realizing that the gastric digestion must be vicariously carried on by the pancreatic secretion. This means that no animal protein can be given and that the maximum amount of protein should not exceed forty grammes per day. Fats also must be restricted

at first. In other words, the diet should be largely a carbohydrate one until the pancreatic secretion can take the place of the pepsin in the gastric digestion. After a period of six months these patients usually can take a small amount of animal protein; in fact, the pancreatic juice then takes the place of the gastric juice entirely, and patients can take practically the same diet as is given to those with normal gastric juice.

Following is a tabulated diet containing the essential food elements and arranged so as to supply adequate caloric needs in cases of sub-acidity:

Breakfast.

Shredded wheat biscuit with cream, or well-cooked cereal with cream; crisp bacon, soft-boiled egg; toast with butter; cup of cocoa or weak tea with cream.

Luncheon.

Consommé or clear bouillon; creamed chicken, sweetbreads; spaghetti, macaroni, or rice; stale graham bread with butter; a cup of weak tea with cream; custard, ice cream, or any simple farinaceous dessert.

Dinner.

Clam broth or bouillon; soft-boiled egg on toast; baked or mashed potato, or any of the vegetables well cooked and well mashed; stale graham bread with butter; custard, blanc-mange, tapioca, farina, rice pudding, or gelatine.

Note: In preparing vegetables, cook thoroughly and mash well, using no meats, fats, or sugar in cooking them.

Myasthenia Gastrica.—This is a functional gastric disorder, independent of anatomical change or displacement, in which the stomach wall loses its muscular tone, the normal rhythmic peristaltic waves becoming irregular and ineffectual, and the chemical and mechanical reflexes physiologically controlling the opening and closing the pylorus and cardia, being thrown out of correlation to such a degree as to permit stagnation of food in this organ.

The condition is one of the most common gastric disturbances, and is characterized clinically by belching and distress in the epigastrium after meals, and a feeling of satiety upon the ingestion of small amounts of food. It occurs in all ages, and with about equal frequency in the sexes.

Four etiological factors of the disease should be kept in mind when attempting to prescribe a diet, namely: (1) Irregular eating, (2) frequent overloading of the stomach with food, (3) distension of the stomach with fluids, and (4) concomitant functional secretory disturbances.

In outlining the diet for atonic muscular conditions of the stomach, the effect of any given

substance on the emptying time of the stomach should be constantly before the physician. The physiological fact that a weakened muscle cannot contract on fluids is an important guide. Only six ounces of liquid should be given with each meal, since this amount is all that is required for the proper mixing of the food. More than six ounces will produce stagnation.

A mixed diet is preferable—the carbohydrates in the form of cereals, such as cream of wheat, boiled rice, hominy or farina; toast, rolls or crackers; puréed vegetables, as potato, string beans and spinach; proteins, such as meats, eggs and milk; and fats in the form of butter. The theory that carbohydrates form gas by breaking up into CO₂ has been disproved. Cooked fruits, without much sugar, and small amounts of ripe, raw fruit are allowed. Sugars, syrups and candies are interdicted because they produce hypersecretion.

The nourishment should be evenly distributed among the meals throughout the day, and each meal should be small in amount so as to avoid overloading of the stomach. Any deficiency in quantity in the regular meals can be offset by independent feedings, which may be given midway between breakfast and luncheon, and midway between luncheon and dinner and at bedtime, in the form of egg and milk, or cereal, or zoolak and cream, with twice-baked bread and butter.

In severer cases it is important that the patient should have complete rest for one hour after each meal. In fact, when marked dilatation and ptosis are present, it is necessary to elevate the foot of the bed and have the patient lie on the right side, to insure the food leaving the stomach within the normal time. In such cases good results may often be obtained by giving the stomach a complete physiological rest for a few weeks, since such thorough rest induces contraction of the stomach to its normal size with resultant normal tone of the musculature, within a comparatively short time. Such rest is obtained by duodenal feeding. Eight ounces of warm milk and one drachm of lactose dissolved in hot water, and an egg—all thoroughly beaten together, and injected slowly through the duodenal tube, every two hours, at body temperature, will be found to be of value. Rectal alimentation does not permit maintenance of the nitrogenous equilibrium, but with duodenal feeding the patient can actually be made to gain in weight. It has, therefore, superseded rectal alimentation in this type of case.

Organic Lesions of the Stomach.—These may be divided into two groups—gastric ulcer and gastric cancer.

The principle in arranging an ulcer diet hinges on the necessity to consider (1) the effect of irritation of food on the gross lesion, and (2) the hyperacidity which is usually present in these cases. It is not only necessary to neutralize the

acid that may be present, but the food must be physically so soft as to cause no irritation of the ulcer itself. These conditions are met first by hourly feeding, and then gradually increasing the intervals between feedings, and adding to the amount of food. In general, the tendency has been to utilize more carbohydrates in the form of well-cooked cereals, thoroughly cooked and puréed vegetables which have been placed through a colander to eliminate irritating substances. By giving more carbohydrates and less protein, intestinal disturbances, tympanites, and intestinal putrefaction, resulting in coated tongues, bad breath, etc., are avoided.

In extreme cases, and particularly those of a neurotic type, those with vomiting, and those in which the stomach requires a complete rest, the administration of milk, eggs, and lactose, at two-hour intervals, injected slowly through the duodenal tube, at the body temperature, will be found to be of considerable value. The preparation of this nourishment is substantially the same as that outlined heretofore for selected cases of *myasthenia gastrica*.

In patients with hemorrhage from ulcer, nothing should be taken by mouth for three days. On the fourth day one ounce of warm milk with lime water may be given every hour. This amount should gradually be increased to two ounces and the interval between feeding lengthened to two hours. At the end of a week some cereal gruels may be added.

The dietetic treatment of ulcer requires individualization. Cases with severe hemorrhage often do well by following the old Leube-Ziemsens treatment. This, however, does not supply sufficient caloric needs, and the tendency has been to give a fuller diet, which is really a modification of the Lenhart diet, and consists in supplementing the latter with cereal gruels.

Two other important features must here be emphasized; (1) That of having an adequate amount of iron in the food (15 mgs. per day) to supply the bodily requirements, and the neglect of which has often resulted in the development of anemia. This iron can best be given through a very carefully prepared vegetable pulp, eggs and cereal. And (2) that of supplying sufficient antiscorbutic elements in the food to avoid the complication of scurvy. Observation of these fundamental dietary principles in cases of ulcer will generally yield good results.

The dietetic treatment of cancer differs from that of ulcer, in that *achylia gastrica* is usually an associated condition and the patient suffers from anorexia. Meat extractives and meat juices are here indicated in order to stimulate the gastric secretion and the appetite, and these substances, as well as alcohol, condiments and various sugar preparations, are included in the dietary, to make the food more palatable and to stimulate secretion. In addition, because of

diminished digestive ability of the stomach, many of the pre-digested foods must often be utilized.

In organic disturbances of the stomach produced by tuberculosis or syphilis, the dietetic treatment should be guided by the application of such general principles as obtain in normal secretion and motility to the pathological conditions present in any given case.

Conclusions.—In conclusion, it should be emphasized:

(1) That in outlining the dietary treatment of diseases of the upper digestive tract, the particular disordered physiology and pathology which is present should be constantly in mind; that is to say, a physician should consider first the effect of any given foodstuff upon the secretory function of the stomach—whether it would increase or diminish the acidity; second, the effect of any given foodstuff upon the motility of the stomach—whether it would increase or diminish the motility; and third, the effect of any given foodstuff upon any pathological lesion of the stomach.

(2) That the diets prescribed should be so arranged as to adequately supply the caloric needs of the body and contain the essential food elements. Here it should be remembered that a patient weighing 150 pounds, confined to bed, will require 2,000 calories daily to maintain his weight.

(3) That all diets should be varied, the patient not knowing of what his next meal is going to consist, and, above all, that the food should be made palatable.

THE PHARMACOLOGY OF DRUGS USED IN DISEASE OF THE UPPER GASTRO-INTESTINAL TRACT.*

By WALTER A. BASTEDO, M.D.,
NEW YORK CITY.

IN responding to a call to speak on the drug treatment of upper gastro-intestinal affections, we had the alternative of outlining a drug management for each of the sundry diseases, or of considering individually the drugs commonly employed. We have chosen the latter, as it is in line with a partial study which we brought out in June, 1919, of the action and value of certain drugs used for stomach effects. As a preliminary to the study of additional drugs we should like briefly to present some of the conclusions reached in that paper, as follows:

ATROPINE AND BELLADONNA.—A summary of the results obtained by Ginsburg and Tumpowsky, Crohn, Rehfuess and others, is as follows:

I. *Action on Acidity and Secretion.*—1. In man, in cases of hyperacidity or hypersecretion

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with cessation of secretion at the end of the digestive period, atropine or belladonna, even in maximum doses, either by mouth or hypodermic, does not cause diminished secretion or acidity.

2. In cases with continuous secretion, atropine in maximum dose (1/50 grain) by hypodermic given either before or during the meal, does not lessen the acidity or secretion of the digestive period, and may even increase it; but it may result in a stoppage of the continued secretion in a reasonable time after the food has left the stomach.

3. In cases with continuous secretion repeated maximum doses of the tincture of belladonna by mouth such that in three days poisoning ensued, caused a cessation of the secretion after the food had left the stomach, but also caused a pronounced *increase* in acidity during the digestive period.

4. Atropine in maximum doses lessens somewhat the psychic secretion. This is an effect not sought in therapeutics.

There is then a complete failure of atropine or belladonna to affect hyperacidity or hypersecretion favorably, except in continuous secretion cases in the period when there is no food in the stomach. Moreover, the drug does not depress and may even increase acidity and secretion during the digestive period, and it checks the continuous secretion only when given by hypodermic in maximum doses or when previously given by mouth to the stage of poisoning.

II. *Action on the Motor Functions.*—1. Atropine or belladonna can exert three kinds of motor effects on the stomach: (a) the abolition of abnormal spasmodic contractions, as in pylorospasm, an effect obtainable in some of the cases only, and then only from maximum doses; (b) the abolition of tone in the whole stomach wall, including the cardiac and pyloric sphincters, an effect not desired in therapeutics; (c) the abolition of hunger contractions. To obtain this last in dogs Ginsburg and Tumpowsky used 1/100 to 1/40 grain of atropine sulphate hypodermatically, doses which in proportionate amounts are too large to be given to man. We do not know of any study of the effect of atropine on hunger contractions in man, yet this work suggests that possibly a similar action is obtainable from maximum doses.

Conclusions.—1. In ordinary hyperacidity or hypersecretion cases atropine or belladonna in any dosage has no useful effects on secretion.

2. In continuous hypersecretion cases it may check the continued secretion after the digestive period, but it does this in maximum dosage only.

3. In pylorospasm it may be useful, but in maximum dosage only.

4. It may check hunger contractions in dogs if used in maximum doses, but this is an effect not yet demonstrated in man.

5. Its repeated administration in such maximum doses is not ordinarily permissible for any length of time.

6. In the doses usually employed or permissible for any length of time atropine and belladonna are wholly without effect on the secretory or the motor functions of the stomach.

HYDROCHLORIC ACID.—1. In cases of achylia gastrica, whether or not accompanying pernicious anemia, a deficiency of acid may be partially overcome by hydrochloric acid medication.

2. For digestive purposes hydrochloric acid should always be accompanied by pepsin.

3. In the achylia with diarrhea, acid alone sometimes produces a noticeable lessening of the bowel movements.

4. When acid produces sourness and stomach irritation its use should not be continued.

5. To avoid acidosis alkalis should be given during the same period, though not at the same time as the acid, the amount required being judged by the effect on the urine reaction.

NITROHYDROCHLORIC ACID.—This is a liquid containing free chlorine, nitrosyl chlorides and a small amount of free hydrochloric acid (Army). It hardly seems worthy of a place in the materia medica.

BITTERS.—1. A bitter is useful as an appetizer for those with subnormal nutrition, as in convalescence from acute illness, provided that it is taken not more than ten minutes or so before the time for eating.

2. As an appetizer it acts in achylia gastrica as well as in cases with gastric secretion.

3. It should be administered in just sufficient dose to give a strong bitter taste, as the larger amounts have a depressant action in the stomach.

4. In subacidity it promotes the secretion of gastric juice.

5. If the patient is in a state of normal nutrition, but psychically disturbed about eating, it will be useless.

6. If the appetite is already normal the bitter may not only fail to increase appetite but may even lessen it.

7. If the stomach and bowels are deranged a bitter may nauseate.

8. The effect on appetite is solely the local one on the taste buds, therefore it cannot be obtained if bitters are given in capsules, coated pills or mixtures which conceal the bitter taste.

BISMUTH.—1. The bismuth salts are to be considered primarily not as antacids, but rather as protectives. They coat the mucous membrane

with a flocculent bland material, which spreads in a phenomenal manner over a large surface.

2. They are valuable in the pains of hyperacidity or ulcer.

3. Ordinarily they are not toxic, but even such small amounts as five grains of the subnitrate four times a day have produced the characteristics of poisoning by the heavy metals, viz.: stomatitis, salivation, a violet, blue-gray or blackish line on the gums, nausea, vomiting, diarrhea and prostration.

4. Bismuth subnitrate, but no other bismuth salt, may liberate nitrous acid and result in nitrite poisoning.

In our former paper we have given the data on which these conclusions are based. We shall now proceed to deal with other drugs in their relation to the stomach.

STRYCHNINE.—In the spinal cord, where the strychnine effect in the body is most pronounced, strychnine has no power to originate impulses—*i. e.*, does not of itself produce motor effects, but merely facilitates the passage of impulses through the reflex arc so that the reflex response to some outside stimulus is increased. This is shown noticeably by increase in muscular tone.

It would seem that strychnine has a similar action in the stomach wall, for Langley and Magnus found that the direct application of weak solutions of it to the ganglia of Auerbach's plexus in the stomach resulted in stimulation, and Ginsburg and Tumpowsky, from hypodermic doses of 1/90 to 1/60 grain in dogs, obtained not only an increase in the tone of the abdominal muscles and an increase in the general excitability of the animals, but also a heightened tone of the stomach wall itself and strengthened hunger contractions. The latter two effects occur equally as well in normal animals and in animals with stomachs severed from all connection with the central nervous system, and are therefore probably due to an action of the drug on some portion of Auerbach's plexus in the stomach wall itself. These doses if increased in proper ratio would be poisonous to man, but they suggest that the action is tonic to the stomach as well as to the skeletal muscles.

Carlson showed that doses of the elixir of iron, quinine and strychnine, when placed in the stomachs of dogs in amounts sufficient to affect the hunger mechanism, usually caused mild symptoms of strychnine poisoning, yet rendered the stomach more atonic than before. Yet we cannot accept these results as contrary to those of Ginsburg and Tumpowsky, for the latter were dealing with strychnine sulphate alone administered hypodermatically, whereas Carlson used a mixture of the phosphates of iron, quinine and strychnine with sugar, alcohol and aromatic oils, the whole being passed to the stomach through a tube.

Strychnine may therefore be considered antagonistic to morphine or epinephrine (adrenaline), and a true tonic so far as the motor activity of the stomach wall is concerned. Cannon found that if the resting stomach has good tone the introduction of fluid (or food) at once starts peristalsis, but if the organ is flaccid and relaxed the introduction of fluid fails to produce peristalsis. Therefore in the treatment of gastric atony it would seem that the use of strychnine is physiologically sanctioned.

Whether or not strychnine favors the production of pyloric spasm has not been determined, but from the studies of Meltzer on contrary or reciprocal innervation there seems great probability that in ordinary therapeutic amounts it does not promote pyloric spasm. A further effect of strychnine is the promotion of reflex secretion and an increase of sensory excitability.

Summary.—In full therapeutic doses strychnine tends to increase the tone of the stomach, the height of the hunger contractions and the peristaltic response to food. It also tends to promote secretion and to increase the sensitiveness of the stomach. It would seem contraindicated in cases with hunger pains or so-called hyperacidity without atony.

ALKALIES.—At the outset let us ask what is the usual stomach condition for which we employ alkalies? The answer is discomfort or pain: the pain of distension, the pain of contraction, pain when the stomach is full, pain when it is empty, pain coming early after eating and pain coming late.

Hunger Pains.—For a moment let us devote our attention to that most noticeable pain which in many of the cases of ulcer and so-called hyperacidity comes on three or four hours after eating, and is relieved so successfully by alkalies. It is known as "hunger pain" or "empty pain," and as its causes are assigned: the irritation from food, hyperacidity, pyloric spasm, hyperperistalsis, hunger contractions and hyperesthesia. To understand our drug action we should know what we are combating, therefore let us examine these alleged causes.

1. **The Irritation of Food.**—In the cases without pyloric obstruction the pain does not come on while the stomach is filled with food but only when it is empty, and then is relieved on taking food. In the cases with pyloric obstruction it may come on at the usual time though the stomach is filled with food. For example, one patient with duodenal ulcer and partial pyloric stenosis was accustomed to relieve his pain about 5 o'clock every afternoon by a glass of soda water or malted milk, or sometimes sodium bicarbonate. One day, after he had obtained complete relief by a chocolate ice cream soda water at 5 o'clock, we passed a stomach tube at 6 o'clock and obtained

not only the soda water but a large amount of the food eaten for luncheon. These facts indicate that the irritation from food is not the cause of hunger pain.

2. Hyperacidity.—According to Carlson “the presence in the stomach of gastric juice of full acid strength (about 0.5 per cent) leads of itself and immediately to no untoward symptoms”; and Hurst (Hertz) and others have demonstrated that ulcers are not sensitive to hydrochloric acid of this strength. Moreover, it has frequently been found that when the hunger pains come on the acidity is not so high as during the digestive period when there are no pains. In a duodenal ulcer case with hunger pains coming on regularly about three hours after eating and in the night, Homans found the acidity at two hours after a test breakfast, 70 free and 80 total, while in the fasting stomach it was a little less, 60 free, 78 total.

Hardt, after the experimental production of gastric and duodenal ulcers in dogs, found no increase of acidity, and in man ascertained that the epigastric pains came on while the acid remained practically unchanged. In one case the acid titer before the pain was 30 free, 50 total, and during the pain period was 35 free, 60 total. Then he gave relief by alkalies, and 1½ hours later, when there was still no pain, found the acidity 65 free, 75 total, the free acidity being thus almost doubled in the painless period. He was led to state that “in ulcer there may be no pains though the contents are highly acid.”

Moreover, hunger pains occur even with complete gastric achylia without ulcer, a group of cases called by Einhorn pseudo-hyperchlorhydric achylia gastrica, because they had the late pains similar to those attributed to hyperacidity though there was no acidity at all. We have had many achylia cases with hunger pains coming on at the usual three or four hours after meals; and recently have had an achylia case with rapid emptying time in which typical hunger pains came on about 1¼ hours after eating, the time when the stomach had emptied itself of food. The pains were relieved by sodium bicarbonate. In ulcer cases being treated with small feedings, if the feedings are not frequent enough we may have the same early recurrence of pain whether there is free acid present or not.

Indeed acidity, pains and ulcer do not seem to have so close a relation as generally believed. The Mayos found ulcer in eleven cases with achlorhydria, and Smithies, in 140 cases of operatively proven ulcer without retention, found 51 with a total acidity below 50, and 12 with free acid below 20. Others report similar findings. (Since the foregoing was written, Smithies has reported that in 2,168 definitely proved cases of peptic ulcer, 56 showed no free hydrochloric acid).

And, further, it is not an uncommon experience to find that hunger pains are relieved by dilute acids, lemonade, orange juice, whisky, beer, and other acid or irritating liquids. We have just seen a patient with hunger pains recurring in attacks of several weeks at a time during the past six years, who has habitually relieved them both day and night by lime drops. As Alvarez remarks, “Many people with subacidity are relieved by alkalies, while some with hyperacidity are made worse by alkalies and relieved by hydrochloric acid or lemon juice.” It must be noted that acid liquids of swallowable strength have an acid titer below that of hyperacid gastric juice, and may actually serve as diluents in the stomach.

It would seem, then, that if acids relieve the pains, and if the same type of pains come on in the absence of acidity or with subnormal or normal acidity, we cannot attribute the pains to hyperacidity, nor their relief by alkali to acid neutralization. According to many authorities (see Crohn's work reported below), alkalies given in the digestive period tend to induce abnormal secretion of acid, but we have no data suggesting that this is the result of alkali given after the digestive period.

Furthermore, in the light of the findings of Rehfuess, who can say what constitutes hypo-, normal, or hyper-acidity? In 864 persons, mostly students, without any digestive symptoms whatever, Rehfuess found 383, or over 45 per cent, with a total acidity reaching 100 or over at some time during the digestive period.

3. Pyloric Spasm.—In certain ulcer and other cases this seems to be a definite cause of hunger pain. Nevertheless, pyloric spasm, as shown by radiography, is frequently present in gastric and duodenal ulcer cases without any pain whatever. Glassner and Kreuzbach believed that the hunger pains were due to pyloric spasm induced by the passage of highly acid chyme into the duodenum, and Carlson surmises that this must be true when no gastric contraction is found to coincide with pain. But Cannon and Hedblom tested this in normal dogs by comparing the time of exit from the stomach of potato alone and of potato mixed with 0.25 per cent and 0.5 per cent of hydrochloric acid. In the acid mixtures there was no retardation of the emptying time. With 1 per cent hydrochloric acid there was distinct pyloric closure, but this strength is unknown in the human stomach. However, Katschkowski induced a lasting spasm of the pylorus by 0.7 and 0.8 per cent hydrochloric acid, and it is not improbable that a milder acid may cause pyloric spasm in some inflammatory cases. Spencer, Meyer, Rehfuess and Hawk found that high acidity caused a greater regurgitation of bile than normal, an effect that could not be obtained if the pylorus were spasmodically closed. Alvarez has shown that in pyloric or duodenal ulcer a wave may start backwards from the pyloric region and

neutralize the normal peristaltic waves before they reach the pylorus and thus prevent the normal pyloric opening. In any case these facts or surmises relate only to the digestive period, and not to the period of hunger pains.

We have seen cases with severe hunger pains occurring 3 or 4 hours after eating and in the night, in whom at the time of the pain the epigastrium was ballooned out and the pylorus on auscultation showed no gurgle. As a rule in these we have found retention. In one case in which the hunger pain had been relieved by a glass of milk, the patient was awakened at 3 hours by pain which was relieved by sodium bicarbonate. He was again awakened at 6 hours and again relieved by soda. He then had two hours' comfortable sleep and awoke without pain, but still a small amount of sour milk was found in the stomach. We argued that the sequence of events was: hyperacidity, pyloric spasm, stagnation, milk souring which caused further hyperacidity, and gas production, and that this, with the pyloric spasm, resulted in distension. The pain was essentially to the left of the midline and not in the pyloric region. At another time, in the same patient, intense pains came on suddenly about 4 hours after eating and were relieved by soda, but the stomach contained food. Apparently several factors were necessary to produce "hunger pains" in this case.

4. *Hyperperistalsis*.—This also is present only during the digestive period, a period during which hunger pains do not ordinarily occur and during which the peristaltic waves as shown by radiography are frequently very pronounced without any pain at all. Furthermore, a most noticeable phenomenon is the prompt relief of hunger pain on taking food, though this regularly sets up peristalsis. Homans has shown that "pain in patients with proved gastric and duodenal ulcers is not necessarily associated with any recognizable action of the gastric walls," and that "intense gastric activity can occur in these ulcer patients without giving rise to pain." It is not then hyperperistalsis that we must combat.

5. *Hunger Contractions*.—These contractions, now well recognized as normal in the empty stomach, follow immediately the cessation of the digestive peristaltic waves. They occur at the usual time of hunger pains, that is, about the end of the digestive period, and have been assumed to be the cause of the hunger pains. Indeed, Carlson stated that hunger pains always accompanied contractions of the hunger contraction type even though there might be food in the stomach. Ginsburg, Tumpowsky and Hamburger thought the pains the result of the increased intragastric pressure brought on by the hunger contractions.

Hunger contractions are immediately stopped if almost any liquid or food is put into the stomach, or any strongly tasting material is placed in the mouth, or inert substances are

chewed. Carlson obtained complete inhibition from wine, beer, brandy diluted with an equal amount of water, 10 per cent alcohol, milk, 0.5 per cent hydrochloric acid, 1 per cent sodium bicarbonate, and even water, though the latter and weak solutions of sodium bicarbonate or acids inhibited ordinarily for only 3 to 5 minutes and not at all when contractions were strong. Inhibition for a short time also resulted from placing in the mouth sugar, quinine, sodium chloride and weak solutions of acetic or hydrochloric acid, and from the chewing of gum, tasteless paraffin wax, straw or palatable food. In the dog inhibition was produced by joy, fear, anger, eagerness for food, concentrated attention, etc. Ginsburg, Tumpowsky and Hamburger found that a 1 per cent solution of sodium bicarbonate had the same value as 0.5 per cent hydrochloric acid in inhibiting tonus and hunger contractions.

In 93 observations on human cases, afterwards proven to have gastric or duodenal ulcer, Wilensky found the hunger contractions after the food had left the stomach excessive in a few cases only, and these nearly all duodenal ulcers with pyloric stenosis. Indeed, in more than three-fifths of the ulcer cases studied at Mt. Sinai Hospital, New York, Crohn and Wilensky found that both tone and hunger contractions in the empty stomach were weaker than normal, while the contractions in functional cases with anacidity, subacidity or hyperacidity showed no departure from the normal. They observed that as a rule patients whose tracings showed good and frequent hunger contractions proved at exploratory to be devoid of an organic lesion.

Homans reported three cases. The first was a penetrating ulcer in the mid-stomach, adherent to the pancreas; in the fasting period there was a continuous slight pain with normal tonus but no hunger contractions, while after eating there was severe pain accompanied by low tonus and no contractions. In another case with penetrating gastric ulcer adherent to the pancreas, in the period for about three hours after the meal there were good digestion peristalsis and fairly high tonus but no pain, and the patient went to sleep; then suddenly the patient was awakened by a dull, grinding pain, which caused her to writhe, and the tracing showed no contractions at all. In a third case, a duodenal ulcer without adhesions, with pain coming on regularly three hours after eating and relieved by food or sodium bicarbonate, a tracing 8 hours after food when continuous pain was present, showed a low gastric tonus and no hunger contractions. When the patient turned on the left side the pain ceased and the hunger contractions began. When he turned on the right side the pain recurred and the hunger contractions ceased. This with others of a like kind and the finding by Crohn and Wilensky that patients with good and frequent hunger contractions were the ones that regularly did

not have an organic lesion, would seem to indicate that hunger contractions are not necessarily the cause of the hunger pains in ulcer. The consideration of hunger contractions is closely linked with that of hyperesthesia.

6. *Hyperesthesia*.—Ginsburg, Tumpowsky and Hamburger believe that the gnawing pains in gastric and duodenal ulcer are caused by hunger contractions of the empty or partially empty stomach, the contractions on the whole being not stronger than normal, and they think that for normal hunger contractions to cause pain there must be a hyper-irritable condition of the stomach.

In four dogs in which Dundon had produced ulcers in the pyloric or duodenal regions, the hunger contractions were greater than normal, but not enough greater to account for the excessively painful character of these contractions in ulcer patients. He concluded that hunger pains in ulcer cases are not due to hunger contractions *per se*, but to hyperexcitability of the sensory nerves in the stomach wall.

Carlson attributes the ulcer pains either to the tension of excessive contractions or to that of normal contractions on hyperexcitable pain nerves, and avers that any pathologic state with either hyperexcitability or hypermotility will cause pains indistinguishable from those of ulcer. After the study of a patient he concluded that the ulcer pains are coincident with the contractions, but that these contractions are not usually any stronger than those of normal digestion peristalsis or normal hunger contractions, therefore there must be in addition a hyperexcitability of the pain nerves.

But radiography has demonstrated that in pyloric and duodenal ulcer hyperperistalsis and hypertonicity in the filled stomach are characteristic; then if the pains are due to a heightened sensitiveness to muscular contractions, why are they not present during the period of highly active motility when there is food in the stomach, and why do they come on suddenly in the empty stomach when the contractions are found to be not greater than normal?

It has been surmised that the pains may be due to acid in the stomach wall itself acting upon the irritable nerves, but if this is so why is the pain not continuous or especially prominent during the digestive period?

Summary on Hunger Pains.—In many ulcer cases and so-called hyperacidity cases there occur "hunger pains" which are relieved by alkalies. These hunger pains are attributed to hypermotility, but are not present during the most active contractions of the stomach, and may be present when there are no contractions. They are attributed to pylorospasm, but are frequently absent during demonstrated pylorospasm. They are attributed to hyperacidity, but are not present when

the highest acidity is present, and may appear when there is subacidity or anacidity. They are attributed to hyperesthesia, but are not brought out by the most vigorous peristalsis and the presence of food, and they are relieved by food and various substances which have irritant properties. We must, therefore, still consider that the cause of the hunger pains of ulcer or hyperacidity is not satisfactorily established, and that as a consequence we do not know how alkalies act to check them. We can feel satisfied, however, that *the relief of hunger pains by alkalies is not due merely to acid neutralization*.

In the administration of alkalies for these pains we may learn something from the habits of patients. In these cases physicians often prescribe 10 or 15 grains of sodium bicarbonate before meals or after meals with comparatively little relief. But the patient himself gets relief by taking half a teaspoon or even a full teaspoon of sodium bicarbonate at the time when the pain comes on, that is, 3 or 4 hours after meals. In repeated weighings we have found that a level teaspoonful or half a teaspoonful not leveled of sodium bicarbonate weighs about 3.5 to 4.5 grams or 52 to 67 grains, and that a full teaspoon weighs from 8 to 11 grams or 120 to 165 grains. Is it not probable that our doses are sometimes too small or given at the wrong time? Some of these patients tolerate well large doses of the alkalies, and perhaps even need alkali, for we have found frequently that half a level teaspoonful on arising and three times during the day was not sufficient to alkalinize the urine. But we have found also: 1. That whether employing sodium bicarbonate or magnesia or a mixture of these much smaller doses suffice for relief if they are accompanied by some carminative, such as peppermint; 2, that if sodium bicarbonate is in too strong solution so that its taste is salty, it may irritate the stomach at first; and 3, that a bedtime dose will often suffice to forestall all night pains. We would, therefore, recommend that in cases with hunger pains the alkali be given in large doses, with peppermint or some similar carminative, with plenty of water, and at a period about three or four hours after the meal, or at about the time of the usual appearance of the pain.

In non-acid stomachs devoid of food, though there is no neutralization, both magnesia and sodium bicarbonate may give relief from hunger pains. We might further note that while magnesia has always a laxative tendency, sodium bicarbonate also in not a few cases acts as a dose of salts to move the bowels; on the other hand, calcium salts are constipating.

Digestive Pain.—By repeated test meals and by fractional tests it has been found by a number of investigators that sodium bicarbonate or magnesia given before or after meals results in a compensatory acid secretion. Crohn found that

1 gram of calcined magnesia given $\frac{1}{2}$ hour before the meal increased the acidity, converting an average total acidity of 55.6 to 78; while on the other hand 0.6 gm. (9 grains) given immediately after the meal, and 0.8 gm. (12 grains) given $\frac{3}{4}$ of an hour after the meal caused a slight decrease in average acidity. But in the last two cases the acidity at the highest point reached was above the highest reached in the control. A dose of 0.8 gm. (12 grains) of magnesia given $1\frac{3}{4}$ hours after the meal caused a rapid neutralization of the acidity without a secondary rise. Doses of 0.3 gm. (5 grains) given successively at $\frac{3}{4}$, $1\frac{1}{4}$, $1\frac{3}{4}$ and $2\frac{3}{4}$ hours depressed the acid curve throughout, and after the third dose actually produced an alkaline reaction. Of sodium bicarbonate, a dose of 2 grams (30 grains) given $\frac{3}{4}$ hour after eating changed the average acidity from 43.6 to 64. After 4 grams (60 grains) of sodium bicarbonate the acidity had increased in 15 minutes to a higher point than before the alkali was given.

According to Crohn's figures alkalies given before meals or in the early digestive period would tend to induce a more than compensatory high acidity, and sodium bicarbonate more than magnesia. This would make one feel that the condition calling for alkalies would be, not hyperacidity but subacidity, were it not that large clinical experience proves the contrary. We have no data to show that following the digestive period alkalies promote acidity. As a matter of fact, in the treatment of cases there would seem to be little reason for reducing the high acidity of the digestive period, and as a rule no reason for neutralizing the acid completely and so abolishing pepsin digestion and the other valuable functions of hydrochloric acid.

Pains during digestion are probably not due to acidity, but rather to the contraction pull on stomach adhesions or even gall-bladder adhesions, to overfulness due to gas or the ingestion of too much food, and in some cases to ulcer towards the cardiac end where acidity does not reach a high point.

Retention Pain.—The late pains of retention are most frequently caused by gas distension associated with pyloric closure or possibly by irritating organic acids, but they may be due to hunger contractions which, when the stomach is hypertonic and the pylorus closed, are prone to take on a tetanic character (Crohn and Wilensky).

Both magnesia and sodium bicarbonate may promote the opening of a spasmodically closed pylorus, probably by neutralizing organic acids; but it is our belief that in distension cases sodium bicarbonate acts better than magnesia because of the carminative action of its liberated carbon dioxide. For pain due to adhesions alkalies can have little if any use.

Comparative Antacid Value of Alkalies.—It is obvious that greater doses of sodium bicarbonate than of calcined magnesia can be given, for the latter is very bulky and insoluble in water. But weight for weight magnesia can neutralize four times as much acid as can sodium bicarbonate, and it does this more slowly and without the production of gas. The heavy magnesia has the same neutralizing power, weight for weight, as the light, but it is 3 to $3\frac{1}{2}$ times as dense. Of magnesium carbonate or calcium carbonate 5 grams are equivalent to about 2 grams of magnesium oxide. Of the milk of magnesia 21 c.c. are equivalent to about 1 gram of calcined magnesia or 4 grams of sodium bicarbonate. In the popular rhubarb and soda mixture there are only 0.014 grams or about 2 grains of sodium bicarbonate in each teaspoonful (4 c.c.), therefore for efficient action this preparation might well be fortified by added alkali.

Time of Passage from the Stomach.—How long may we expect our alkali to remain in the stomach? Cohnheim and Best showed that sodium chloride given in 2 per cent solution takes much longer to leave the stomach than physiological saline, and T. R. Brown found that certain saline waters, for example, Hunyadi, even when administered in isotonic strength, remained in the stomach till made decidedly hypotonic by fluid added by osmosis through the stomach wall. Morse, with solutions of sodium chloride above 3 per cent, also noted an increase of fluid by osmosis. Spencer, Meyer, Rehfuß and Hawk observed that while a 1 per cent solution of sodium bicarbonate hastened the emptying of the stomach, yet a 5 per cent solution remained in the stomach till it was considerably reduced in strength. They attributed this reduction to acid secretion. It is probable then that in the acid-containing stomach devoid of food, sodium bicarbonate, whether remaining as such or converted into sodium chloride, or magnesia which is changed to the chloride, must probably form a hypotonic liquid before it passes the pylorus. We might note that a level teaspoonful of sodium bicarbonate in a glass of water makes such a hypotonic liquid. As sodium bicarbonate in the acid stomach is converted quickly to chloride it probably empties more rapidly than the more slowly formed magnesium salt.

Sodium chloride in the duodenum has been shown by Sato to lessen the volume of the gastric secretion. Can it be that this is ever a factor in the reduction of gastric pain, and may we figure that perhaps sometimes administered sodium bicarbonate expresses itself chiefly as sodium chloride in the duodenum and carbon dioxide in the stomach?

That alkalies by neutralizing acids have no especial curative action on ulcers themselves would seem to be indicated by the experiments of Dragstedt, who found that experimental ulcers required no longer time for healing and displayed

no more tendency to chronicity when exposed to normal gastric juice than did similar lesions in the absence of gastric juice.

Time does not permit discussion of the possibility of harm from the continued use of magnesium salts on account of their action in stopping salivary digestion (Hawk) and in displacing calcium. Time also forbids the consideration of the possibility of alkalosis production from the continued use of alkalis, but the author believes this an improbable result from ordinary stomach doses unless the kidneys are impaired.

Conclusions.—1. Hunger pains cannot be attributed solely to any one of the following factors: Irritation by food, hyperacidity, pyloric spasm, hyperperistalsis, hunger contractions or gastric hyperesthesia.

2. Alkalies check hunger pains whether there is hyperacidity, normal acidity, subacidity or complete achylia.

3. To check hunger pains alkalies should be given in full dosage and about the time of onset of the pains. Both sodium bicarbonate and magnesia are effective.

4. To check pains of the digestive period alkalies are not effective except when the pains are due to distension.

5. To relieve distension at any period alkalies act best if accompanied by a carminative, such as essence of peppermint. Without the carminative sodium bicarbonate is better than magnesia.

6. In retention from pyloric spasm alkalies given in the late digestive period not only relieve distension by causing belching, but probably also enhance the emptying of the stomach by favoring pyloric relaxation.

7. In spite of the finding that alkalies promote the secretion of acid in the digestive period, these drugs cannot be recommended for the treatment of subacidity.

8. Alkalies have no direct healing action on acute ulcers.

9. The value of alkalies is not to be measured by their power to neutralize acids.

10. Light magnesium oxide (calcined magnesia) has four times as much antacid power as sodium bicarbonate, but lacks its carminative action.

11. On the bowels magnesia has the action of a saline cathartic, sodium bicarbonate is at times laxative, calcium salts are constipating.

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PRACTICAL CHEMICAL LABORATORY EXAMINATIONS IN GASTRO-INTESTINAL DISEASES.*

By HOWARD F. SHATTUCK, M.D.,

and

JOHN A. KILLIAN, Ph.D.,
NEW YORK CITY.

THE introduction of some of the newer methods of clinical investigation, and particularly that of the X-ray, has considerably reduced the relative importance of chemical examinations in the study of gastro-intestinal problems. Continued perfection of technique, and increasing accuracy of roentgenological interpretation have led many clinicians to distrust results of chemical examinations in these conditions, or to consider them of very little importance. And yet an intelligent interpretation of the findings has still a real contribution to make to the diagnosis of diseases of the gastro-intestinal tract. Very frequently, it is true, many of the tests give little or no help, and some give similar positive results in totally different conditions. But they often yield findings in some clinical problem that demands every bit of evidence possible for its solution. We will discuss briefly a few practical chemical laboratory examinations, for the most part limiting ourselves to some of the findings in chemical analyses performed at the Post-Graduate Hospital. All of the examinations have been made by us or under our direct supervision.

A study of the results of the analyses of gastric extracts has been rather interesting. On

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going over a group of reports on the Ewald test breakfast we were impressed by the relatively high per cent of free hydrochloric acidity of the total acidity in cases of gastric ulcer. Rehfuß¹ has pointed out that in non-obstructive ulceration there is a late hypersecretion and hyperacidity, in which the free hydrochloric acid approaches the total acid. He did not state the actual percentages. This high percentage of free hydrochloric acid, we found, occurred particularly in cases of gastric, as distinguished from duodenal, ulcer. A group of unselected cases of duodenal ulcer showed in the gastric analyses, figures for the free hydrochloric acid that ranged from 20 to 68 per cent of the total acidity, the figures over 50 occurring only in post-pyloric ulcers in the series. The average percentage of the free hydrochloric of the total acidity was well under 50 per cent in the collection of duodenal ulcers.

The group of gastric ulcers returned gastric analyses with figures for the free hydrochloric acid that ranged from 53 to 80 per cent of the total acidity, the average percentage being well over 50 and approaching 75 in most cases. In gastric carcinoma, showing the presence of free hydrochloric acid in the gastric extracts, the average percentage of free hydrochloric acid of the total acidity was very much under 50, reaching that figure in one instance and exceeding it only once. A rather large group of miscellaneous conditions, exclusive of ulcer and cancer, yielded figures in which the average percentage of free hydrochloric of the total acidity was well under 50. We gathered the impression, therefore, that gastric analysis figures, showing a relatively high per cent of free hydrochloric acid of the total acidity, were suggestive of gastric ulcer.

A second interesting point in the series of gastric extracts was the occasional association of free hydrochloric acid and lactic acid in cases of so-called malignant ulcer or carcinoma, without retention, engrafted on an old ulcer base. It is a common experience to find lactic acid in the gastric extracts of cases with retention due either to ulcer or carcinoma, and a very uncommon one to find lactic acid in the gastric contents of cases of peptic ulcer without retention. For this reason it is frequently not looked for, and we should, therefore, like to emphasize the importance of testing for lactic acid in all cases, even those showing free hydrochloric acid without retention. We feel, therefore, that the finding of a considerable amount of lactic acid in cases showing the presence of free hydrochloric acid but no retention by the X-ray of stomach tube would seem to be suggestive of a possible gastric carcinoma implanted upon an old ulcer base, rather than a simple peptic ulcer.

We were further impressed, in the study of the gastric analyses, with the value of the Wolff-Junghans test for soluble albumen in gastric extracts. Since the method was first² described, its value has been demonstrated by a number of

workers. Smithies³ reported that next to the presence of Boas-Oppler bacilli in gastric extracts, a positive or suspicious Wolff-Junghans test was the most frequent finding in his series of 230 cases of gastric cancer. His findings were as follows: Wolff-Junghans test positive or suspicious in 80 per cent, free hydrochloric acid absent in 52 per cent, lactic acid present in 48 per cent, occult blood in stools in 75 per cent, and Boas-Oppler bacilli in 93 per cent. Friedenwald and Kieffer⁴ found the test positive in 83 per cent of gastric cancer presenting an absence of free hydrochloric acid and in 72 per cent of the early cases. In our group of cancer cases, 80 per cent gave a positive or suspicious Wolff-Junghans test, using the figure 150 as showing a suspicious reaction and 200 or more a positive reaction.

The test has been of particular value in the differentiation of malignant from non-malignant achylia. In a study of sixty-seven benign achylia, such as are found in pernicious anemia, simple achylia gastrica, etc., Friedenwald⁴ found that 86.5 per cent gave negative reactions and only 13.5 per cent gave a positive or suspicious reaction. Clarke and Rehfuß⁵ first showed by the fractional method, that the albumen and acid curves run quite parallel in benign achylia, while in carcinoma the protein curve quickly diverges from the acid curve, the separation increasing markedly with the progress of digestion. Friedenwald and Kieffer⁴ reached similar conclusions in the study of five cases of gastric carcinoma.

Our records also show that the benign achylia gave quite a low percentage of positive or suspicious Wolff-Junghans reactions for soluble albumen, and the protein curves resulting from the fractional analyses were low and quite parallel with the total acid curves. In the cases of gastric carcinoma examined by the fractional method we obtained uniformly, in cases showing a positive or suspicious Wolff-Junghans reaction, albumen curves that rose rather abruptly from the acid curves, usually at about the one and a quarter hour period. We will show as an example a striking curve of this type in a case of gastric carcinoma, in which a test meal of tap water was employed.

Our records of gastric analyses have also brought out clearly the great value of the fractional method of gastric analysis in the differentiation of the total persistent achylia from the spurious or psychic achylia in which we find an ultimate elaboration of a gastric juice containing both free hydrochloric acid and enzymes. A few years ago Rehfuß presented an interesting study of some of these cases. The inaccuracy of the ordinary method of examination of a single specimen of gastric contents removed one hour after the administration of an Ewald test breakfast is clearly shown by a study of the gastric contents of these cases, removed at frequent intervals through the cycle of digestion. And the value of

the findings not only in the diagnosis of these cases, but also in their prognosis, makes the method worthy of much wider application than it now has. The cases showing the ultimate presence of free hydrochloric acid are not only different from the others, but have a different and better prognosis. In none of the cases of true achylia gastrica, or pernicious anemia, or gastric carcinoma having an achylia, were we able to demonstrate the presence of any free hydrochloric acid at any time in the digestive cycle. There were, however, several cases that appeared by the ordinary method to be cases of true achylia gastrica, that showed when we examined them with the fractional method that they were spurious or psychic achylia. The free hydrochloric acid appeared always after one hour and at times as late as two hours. One case, whose chart we will show, had a free hydrochloric acid of 10 in an hour and a half, and continued to show it in all subsequent specimens examined. There was an undoubted functional or psychic factor present in some of these cases as they showed on later examination, after treatment or an improvement in their general condition, the presence of free hydrochloric acid in all the specimens removed.

The next practical laboratory examination to which we wish to call attention is that of the enzyme activity of the duodenal contents in pancreatic disturbances. Einhorn⁶ Crohn,⁷ Chace and Myers,⁸ among others, have clearly shown the value of this procedure. The test is not difficult, and the information obtained is of sufficient value to make it worth while employing in most cases of pancreatic disease. It gives us results of qualitative rather than quantitative value, however. And the normal variation in the activity of the pancreatic enzymes as obtained in the duodenal juice is so great that only their absence would seem to be of diagnostic value. Duodenal juice is obtained by means of any one of the commonly employed duodenal tubes. The best method seems to be to use a standard test meal which tends to give a uniform stimulus, and to remove the duodenal contents at a fixed time interval of about an hour and a half. We will not describe the details of the technique but merely give some results in cases studied that show the value of the method.

In a group of thirty-one cases studied there were two cases of pancreatitis and twenty-nine miscellaneous cases. In the cases not showing pancreatic involvement, the pancreatic enzymes were all uniformly present, except in one case amylase alone was absent in the duodenal contents, apparently because the acid reaction was unfavorable for its demonstration. In one case of pancreatitis, the protease and amylase were entirely absent and the lipase greatly reduced in amount. The other case showed an absence of protease in the duodenal contents, a very small amount of lipase and a considerable quantity of

amylase. This case also had an achylia gastrica, and the amylase may therefore have represented diastase from the saliva.

The second chemical examination in pancreatic disturbances to which we wish to call attention is that of diastase in the feces. Brown⁹ concluded from this study of a series of cases that the quantitative estimation of diastase in the stool has the easiest technique, gives the most clean-cut results, and is less open to criticism than any other method attempting to estimate quantitatively pancreatic function. In five cases of carcinoma of the pancreas, three verified by operation, he found no diastatic ferment in the stools. In six cases of chronic pancreatitis, all verified by operation, he found the diastase in the stools markedly diminished. We report the findings in four cases of pancreatic disease, the diagnosis confirmed by operation in each case. There were two cases of carcinoma of the head of the pancreas, and in each case diastase was entirely absent in the stool. The two cases of chronic pancreatitis showed, in one case the lower normal limit for diastase in the stool, and in the other case a greatly reduced amount. These findings were distinctly helpful in the diagnosis of the cases.

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THE SIGNIFICANCE OF SYPHILIS IN PRENATAL CARE AND IN THE CAUSATION OF FOETAL DEATH.*

By J. WHITRIDGE WILLIAMS,
BALTIMORE, MD.

I THINK that it may safely be said that the propaganda for the development and extension of prenatal care, which has been conducted during the past few years in this country, constitutes one of the most important advances in practical obstetrics, as it has taught us to appreciate the unnecessary wastage of foetal life which has occurred in the past, and to consider seriously how it may be diminished.

Unfortunately, this movement is not of medical origin, except in so far as the efforts of the pediatricians to popularize maternal suckling had led to some supervision over pregnant women. Years ago Budin instituted consultations for

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pregnant women in Paris, and Ballantyne, of Edinburgh, did important pioneer work concerning the production of foetal abnormalities, and insisted upon the benefits which might follow intelligent antenatal care, yet real interest in the prophylactic supervision of pregnant women originated with laymen. Indeed, I do not think that I shall go far wrong when I state that the greatest credit in this respect belongs to Mrs. William Lowell Putnam, who some years ago organized, at her own expense, in Boston, a small service in which women could be supervised during the latter half of pregnancy for the purpose of instruction in the rudiments of the hygiene of pregnancy, of seeing that they were properly nourished and not overworked, of teaching them the importance of suckling their children when born, and particularly of preventing the occurrence of eclampsia by the early recognition and treatment of the toxæmias of pregnancy.

One of the most important agencies in bringing about the reform in this country has been the Association for the Prevention of Infantile Mortality—now the American Child Hygiene Association; for, at its meetings each year, philanthropic laymen, social workers and trained nurses, as well as occasional medical men, read papers upon the subject and gradually aroused popular interest in it, and it was not until after the movement had attained considerable momentum that obstetricians became generally concerned with it, and even at present many of them still treat the subject in a lukewarm manner.

In its broadest sense, prenatal care may be defined as such supervision of the pregnant woman as will enable her to go through pregnancy safely, to bring forth a normal living child with minimal danger, and to be discharged in such physical condition as to be able to care for the child efficiently and to suckle it for at least the first months of its life. This means that the women must be under medical supervision from the earliest possible period of pregnancy, so that its various abnormalities may be recognized at their inception and treated prophylactically. It also means the application of the best methods of obstetrical diagnosis during the weeks immediately preceding labor, so that abnormal presentations, disproportion due to contracted pelvis, as well as other complications may be recognized, and corrected if possible before its onset. It further means the proper conduct of labor, and such supervision during the weeks immediately following it, that the woman may be discharged in such physical condition as to be able to carry on her usual avocations efficiently, and to give her child the necessary care. Finally, it implies medical supervision of the child during the first year of life, so that the effort expended during pregnancy and at the time of labor be not wasted; as it should be realized that the object of pregnancy is to secure a child which will have a reasonable pros-

pect of reaching adult life, and that every preventable foetal or infantile death means biological and economic waste.

It is evident that such a program requires not only first-rate obstetrical care, but such supervision of the patient before and after delivery by trained nurses and social workers as will make it possible for her to realize the importance of following closely the various regulations laid down for her guidance. In other words, efficient prenatal care must be regarded in great part as a campaign of education for physician and patient, in which both must be taught to realize that ideal obstetrics implies not merely intelligent care at the time of labor, but that it has a much wider scope and should begin as soon as the woman realizes that she is pregnant and continue until she is discharged in ideal physical condition and suckling a normal child. As the majority of hospital patients belong to the less intelligent classes, it is only by means of education through prenatal workers that they can be induced to make the necessary visits to the dispensary before and after delivery, and consequently I have become convinced that efficient prenatal and postnatal care cannot be carried out by physicians alone, and is feasible only when the requisite number of trained nurses and social workers are available.

In the earlier work, attention was concentrated mainly upon three points: 1, the recognition and earliest possible treatment of the toxæmias of pregnancy in the hope of preventing the development of eclampsia; 2, supervision of the general physical and material condition of the patient with the object of diminishing the chances of premature labor; and 3, such instruction during the latter part of pregnancy that the mother may be prepared to suckle her child after it is born. When, however, the subject was taken up by obstetricians, it became apparent that the best results could not be obtained unless the scope of the work were materially widened so as to include everything which is implied by good obstetrics, plus the supervision and instruction derived from nurses and social workers.

Soon after taking up this work, I realized that the recognition and treatment of syphilis early in pregnancy constituted an important and fruitful field for a radical reduction in foetal mortality, and in my presidential address—"Upon the Limitations and Possibilities of Prenatal Care"—before the American Association for the Prevention of Infantile Mortality in 1915, I developed the idea that more lives could be saved along such lines than by any other single method. That address was based upon the critical study of 700 foetal deaths occurring in 10,000 consecutive deliveries in the Obstetrical Service of the Johns Hopkins Hospital, and included not merely the deaths at the time of labor, but also those occurring during the last ten or twelve weeks of pregnancy, as well as those during the two weeks

immediately following delivery. Upon analyzing the causes of death, it was found that syphilis was responsible for 26% of the entire number, and that it caused more deaths than any other single factor, and very many more than the toxæmias of pregnancy, which up to that time had been considered the greatest field for prophylactic effort. Consequently, I concluded that if syphilis could be eliminated greater progress in prenatal care would be made than by any other means at present available.

In the 700 cases under consideration the diagnosis was made by the recognition of congenital syphilis in the living child, or from the presence of certain histological changes observed on examination of the placenta, which we had learned to associate with the disease; while in only a relatively small proportion of the cases was it made at autopsy. With the discovery of the Wassermann reaction and the demonstration that the spirochete was the cause of syphilis, our knowledge concerning the disease became greatly widened, so that we were able to diagnosticate it in many mothers and infants in whom it had formerly been overlooked, as well as to demonstrate the syphilitic nature of certain lesions which had previously not been considered as having any relation with the disease.

While preparing my article in 1915, I became convinced that the only way in which the problem could be approached with any hope of effective solution was by determining the Wassermann reaction in every pregnant woman at her first visit to the Dispensary, and subjecting her to intensive antisyphilitic treatment whenever it was positive.

This work was begun in April, 1916, and the present paper is based upon the critical study of 302 foetal deaths occurring in 4,000 consecutive deliveries between that period and December 31, 1919. In this series every effort was made to elicit a possible history of syphilitic infection and to detect the presence of the clinical signs of the disease, while a Wassermann test was made at the first visit of the patient, and if a positive result were obtained, she was subjected to proper treatment in the Syphilis Clinic, provided sufficient time was available before delivery. At the conclusion of labor a Wassermann was likewise taken from the foetal blood obtained from the maternal end of the umbilical cord. Every placenta was preserved and examined histologically, and finally, if the child was born dead or died after delivery, every effort was made to obtain an autopsy in order to determine accurately the cause of death, particular attention being given to the recognition of syphilitic lesions and to the demonstration of the presence of spirochetes. Consequently, in each of these 4,000 cases we have a careful clinical history of the patient, as well as a record of the maternal Wassermann, of the foetal Wassermann at the time of birth, of

the microscopical examination of the placenta, and in case of death of the child a complete autopsy, so that it is apparent that few cases of syphilis could escape recognition. Furthermore, the patients who presented a positive Wassermann were followed up by our social workers, and every effort was made to see that they were appropriately treated. At present we are endeavoring to get back as many patients as possible, who at any time presented signs of syphilis, for the purpose of ascertaining what has happened to them and their children. Unfortunately, however, this information will not be available for incorporation into this study, which is based more particularly upon the critical study of the foetal deaths occurring in this series of cases; while the conclusions to be drawn from the Wassermann reaction will be considered in a report to be made to the American Gynecological Society in May, 1920.

I think it only fair to preface our study by saying that our material differs from that which may be collected in many other cities by the fact that somewhat more than one-half of our patients were blacks. Thus, in the 4,000 cases under consideration, there were 1,839 white and 2,161 black women, in whom the incidence of positive Wassermans was 2.48 and 16.29 per cent. respectively. In other words, once in every fortieth white, and once in every sixth colored woman. It should, however, be borne in mind that this incidence does not exhaust the possibilities of syphilis, as there were 105 additional women in the series in whom the Wassermann reaction was negative, but in whose histories some mention was made of syphilis. Forty-four of these women had presented a positive Wassermann in a previous pregnancy, which had later become negative following efficient treatment, with the result that the present pregnancy ended in the birth of a normal child. On the other hand, in the remaining 61 women, autopsy revealed characteristic lesions and the presence of spirochetes in the foetal tissues, or the live child presented clinical evidence of hereditary syphilis, or the placenta showed characteristic syphilitic lesions.

Two hundred and twelve of the 302 dead babies came to autopsy. These included not only infants dying at the time of labor or during the two weeks immediately following it, but also those dying during pregnancy from the time of viability onward; namely, children weighing between 1,500 and 2,500 grammes or measuring between 35 and 45 cm. in length. Of the 302 deaths, 99 occurred in white and 203 in black women, an incidence of 5.4 and 9.4 per cent respectively. 157 deaths occurred at the time of labor or during the first two weeks of the puerperium, while 145 were premature.

Syphilis was noted in 104 cases, in 89 of which the diagnosis was confirmed by autopsy with the demonstration of spirochetes in the foetal tissues; while in the remainder it was made from the pres-

ence of syphilitic lesions in the placenta, associated with a positive Wassermann on the part of the mother. Upon analyzing the causes of death, we obtained the following figures:

	Cases	Percentage
Syphilis	104	34.44
Dystocia	46	15.20
Toxæmia	35	11.55
Prematurity	32	10.59
Cause unknown	26	8.61
Placenta Prævia and Premature Separation	16	5.28
Deformities	11	3.64
All other causes	32	10.69
	302	100.00

Before considering these figures critically, it may be well to say a few words as to how the classification was established. The cause of death was determined by the autopsy findings, and when they were not available, from careful study of the clinical history of each case. Thus, in 89 of the 104 syphilitic cases, the diagnosis was made at autopsy, while in the remaining 15 it was based upon clinical findings in the child, or upon the presence of syphilitic lesions in the placenta associated with a positive maternal Wassermann.

Under dystocia were included all deaths resulting from mechanical difficulty or undue delay at the time of labor; as, for example, craniotomy, decapitation, birth injuries, prolapse of the cord, undue delay during the second stage incident to disproportion between the size of the child and the pelvis, etc. A certain proportion of such deaths must be attributed to error in judgment on the part of those conducting the delivery, while others were unavoidable. Under the deaths attributed to toxæmia are included not only the children which were born dead during an eclamptic attack, but also the premature live children, which were born spontaneously, or as the result of the induction of labor, and could not be raised.

In the category of prematurity, we have included only children whose imperfect state of development appeared to be the sole cause of death. In such cases, no lesions were found at autopsy, and the children appeared to be normal except for their small size. Of course, it is possible that a more intensive search for spirochetes might have led to a positive result in a certain proportion of these cases, particularly when the maternal Wassermann was positive; but, as they were not found, the cause of death was set down as prematurity. Moreover, it should be understood that we have not included in this category premature children born of mothers suffering from toxæmia, placenta prævia or acute infectious diseases, etc., as in such circumstances death was attributed to the underlying disease, and not to the imperfect development of the child.

Great interest attaches to the 26 cases for which no cause of death could be ascertained. Fourteen of these babies came to autopsy, which failed to reveal definite lesions; while in the other twelve, careful study of the clinical course of labor did not enable us to formulate a satisfactory explanation for the fatal outcome. In several of the autopsy cases the mothers presented a positive Wassermann, or the placenta showed specific changes, yet syphilitic lesions could not be demonstrated in the foetal organs nor spirochetes be found, so that death could not be attributed to syphilis, no matter what the presumption might be. This group of deaths is extremely suggestive, and affords striking evidence of how little we really know of antenatal pathology and suggests important possibilities for future research.

It is not necessary to consider in any detail the deaths associated with placenta prævia or with premature separation of the normally implanted placenta, as they are clearly the result of the underlying abnormality. Likewise in the category of deformity, which includes examples of hydrocephalus, anencephalus, spina bifida, atresia of the intestinal tract, developmental abnormalities of the heart, etc., the condition originated in the earliest period of embryonic life, and could not have been prevented by any means at our disposal.

Finally, in the last group are collected 32 deaths, which were attributable to one of eleven different causes, including atelectasis, about which we know nothing, acute infectious diseases of the mother, accidental suffocation, foetal bacteræmia, hæmorrhagic disease, etc. Many of these were clearly unpreventable, while in others our knowledge concerning the underlying cause is so hazy as to make inadvisable any positive statement.

Upon analyzing the figures in the summary given above, it is seen that 89.3% of the deaths are attributable to seven groups of causes, of which syphilis is the most important, as it accounts for 34.44% of the total number. This is almost as great as the mortality for the next three groups combined, as dystocia, toxæmia and prematurity were responsible for 37.34%, or only 3% more than for syphilis. Consequently, it is apparent that if it were possible to eradicate syphilis from our material, we should effect as great a reduction in foetal mortality as by doing away with all foetal deaths due to the various accidents at the time of labor, toxæmia, and prematurity combined, which is manifestly out of the question.

As large as these figures seem, they do not entirely represent the ravages of syphilis, as we have already indicated that it is quite possible that more careful search might have revealed the presence of spirochetes in the tissues of a considerable fraction of the autopsies in which the cause of death was attributed to prematurity, as

well as in a certain number included in the unknown group. Moreover, they do not include the cases of congenital syphilis in babies which were discharged alive, or in whom the disease developed later.

It must be admitted that this unusually large incidence of syphilis can only apply to hospital service with a large black *clientèle*, such as ours, and will not be noted in private practice or in hospitals in communities in which the majority of the inhabitants are white, or in which the colored people are more intelligent than here. Nevertheless, even if we consider only our white patients, syphilis still continues to be a very important cause of foetal death. As has been indicated above, there were 99 white infant deaths in our material, in 12.12% of which syphilis was the etiological factor. In other words, one out of every eight of our white babies died from syphilis.

Upon comparing this mortality from syphilis with the other causes of death in white infants, it is seen that it exceeds all other causes except dystocia, and is nearly as great as for that. In other words, while 15.2% of our children died from the various accidents of labor, 12.12% died from syphilis, so that it is apparent that even among the white children syphilis represents one of the most important causes of foetal death, and is responsible for a greater mortality than toxæmia. Consequently we should avail ourselves of every method to recognize its existence as early as possible, and then treat it energetically.

This means that all obstetrical patients should be encouraged to register not later than the third or fourth month of pregnancy, that a routine Wassermann should be made at the first visit, and in case the result is positive, intensive treatment should be started immediately. In the case of the ignorant patient, mere advice to return at stated dates for treatment will not suffice, and it will be necessary for the social worker to follow her to her home and insist upon the necessity of following all directions implicitly. This frequently requires numerous visits, but only in this way can ideal results be obtained, and of course means the expenditure of a large amount of time on the part of the workers, as well as a considerable financial outlay.

I had hoped to be able to give figures showing a marked contrast between the results obtained in the past when the Wassermann was made only when indicated by the history of the patient and those obtained in the present series in which it constituted a routine procedure. Unfortunately so many elements enter into such a comparison that the tabulations are not convincing, but the following figures will give a graphic idea of what may be accomplished: 421 of the 4,000 women under consideration presented a positive Wassermann reaction, but unfortunately many of them

did not receive ideal treatment. In some instances they registered too late to receive any treatment, while others did not return regularly, and so were imperfectly treated, as for some time we had too few prenatal workers to supervise our patients efficiently, with the result that only a relatively small proportion received ideal treatment. With this in mind, we have divided our patients into three groups, namely:

a. No treatment.

b. Inefficient treatment, namely, patients who received only 2 or 3 injections of salvarsan and no after-treatment.

c. Satisfactory treatment, in which the patients received 4 to 6 injections of salvarsan followed by a course of mercurial treatment, with the result that the Wassermann became negative and remained so.

In the three categories there were 157, 103, and 163 patients, respectively, and the results of treatment are graphically shown by the fact that in group "a" 52% of the children were born dead or presented some evidence of syphilis, as compared with 37% in group "b," and only 7.4% in group "c." In other words, the evidence at our disposal shows that if syphilis is early recognized in the pregnant woman, and is intensively and appropriately treated almost ideal results may be obtained so far as the child is concerned. Consequently there is every reason to hope that in the future syphilis may be practically eradicated as a cause of foetal death in all properly conducted clinics.

On the other hand, it must be realized that even with the most perfect mechanism, ideal results will never be obtained, as our investigations show that the disease will escape recognition in a certain proportion of pregnant women, for the reason that they frequently exhibit no clinical manifestations and occasionally present a negative Wassermann as well, so that the existence of the disease is not suspected until a macerated child is born or the non-macerated child is shown to be syphilitic at autopsy. This, however, should not discourage us, as such occurrences are comparatively rare, and if the course of procedure here outlined is faithfully followed, syphilis can be reduced from the most important cause of foetal death to one of the least frequent.

I hope that you will not think I have been one-sided in presenting the subject as I have, or that my judgment has been warped by our experience in Baltimore. I am well aware that syphilis represents only one of the causes of foetal death, and that all the others must be taken into consideration in a broad program for the reduction of foetal mortality, but at the present time, in my judgment, syphilis appears to offer the most promising field for immediate results; as a little thought will make it clear that a considerable proportion of the deaths from dystocia are

unavoidable, and until our knowledge concerning the mode of production or eclampsia has become further extended, we must consider that its prophylaxis has almost reached its limit. Likewise, there is no immediate prospect of reducing the mortality from prematurity, as we are almost entirely ignorant concerning the causation of spontaneous premature termination of pregnancy, except when syphilis, toxæmia or gross overexertion is the underlying factor. Moreover, it must be acknowledged that the foetal death-rate associated with placenta prævia and premature separation of placenta, is susceptible of only very gradual improvement, while that due to congenital deformity is at present altogether beyond our control.

Discussion.

DR. WILLIAM E. STUDDIFORD, New York: I think this paper is most timely, and those of us who have started systematic work in the prenatal clinics find that our results correspond pretty closely to Dr. Williams'.

We have found at the Sloane Hospital since starting the routine Wassermann on all cases in the prenatal clinics that we ran about 70 per cent. of the cases with a positive Wassermann. The service at the Sloane comprises both whites and blacks and, from its locality, it has probably a little higher proportion of blacks than some of the other maternity clinics.

I have not had time to analyze the statistics which we have at hand, but I know our results show about 10 per cent. of positive cases in the prenatal clinic.

We have started just as Dr. Williams has in his clinic, getting those women under intensive treatment, with the result that the earlier they are treated the better.

I have no reports giving an analysis of our cases. Our time has been too short up there to bring any report.

There has been one thing, however, that has been rather striking, and that is the result of the Wassermans on the babies. They have varied. We have had babies born of mothers with positive Wassermans and the cord Wassermann has been positive in some cases and negative in others.

We have lately been taking a second Wassermann from the baby at the end of ten days or two weeks, finding then a variation in the Wassermann as compared with the cord in order to have that subject under discussion and investigation, our feeling being that if those babies show a positive Wassermann and that Wassermann is significant and means that they have syphilis, and that they should be very promptly treated. So we are starting a plan by which those babies, when they and their mothers are discharged from the hospital, shall immediately return to the Pediatric Clinic, under the care of the pediatri-

cians and the Department of Syphilography, and they are started on intensive treatment, the idea being to keep the children under observation over a period of years, if possible, and note the results.

There is no question but that the amount of good that can be done by taking routine Wassermans and establishing the treatment where it is necessary will save a tremendous number of children, and it is also a benefit to the parent.

DR. BERNARD COHEN, Buffalo: In talking of the prenatal care of women, in 1902, Dr. Williams and I took part in a symposium at the meeting at the New York County Medical Society, and the question of establishing prenatal clinics was then taken up as per suggestion of Dr. Williams.

It seems that it is all right in the large cities where a great many men are willing to devote their time and give such services to the public, but what about the men in the smaller cities, with no means to work with and no social workers for a man to gather around him, to help? How is a man going to do such work under those conditions? That has been the problem in the smaller city and in the smaller towns. It is up to them not to put the burden entirely on the medical man, but, to my mind, to have the Government assume that element of the social service work among the people.

I also want to suggest that in the work in the larger cities where they have so much syphilis, that after the mother and child are returned home, that they send the father back and probably get the seat of the infection and eliminate that, because the other side has also got to be considered and must be taken care of. If the mother will come back with practically a good cure and no more spirocheta in her blood then the father will re-infect her before the next child.

DR. SAMUEL J. DRUSKIN, New York: The difference in the prevalence of syphilis among the various races has been noted by me at both the Berwind Maternity and the Jewish Maternity Hospitals. At the Berwind Maternity we have a mixed service. A large percentage of our cases at that institution are colored, and there we have noted quite a great many cases of syphilis.

We have gone into the question of the Wassermann reaction, etc. We have not had the opportunity of doing the pathological examinations, autopsies, etc., that Dr. Williams speaks of, because our service is largely an outdoor service.

At the Jewish Maternity we find very few syphilitic cases, or deaths due to syphilis, though we have noted in the younger generation of pregnant women that syphilis is of slightly more frequent occurrence.

DR. A. J. RONGY, New York: I think Dr. Druskin is absolutely correct in his conclusion.

In the obstetrical service at Lebanon Hospital we have as a routine taken the Wassermann from the cord with the result of finding in a large series of cases less than one per cent. of positive Wassermans.

Now the question arises as to whether the cord Wassermann is a true indicator, or whether further investigation upon the mother or child will not show that there is a larger percentage of syphilis prevalent.

There is one question I want to ask Dr. Williams, and that is this: Do cases of congenital syphilis in children, even if they are treated, do well when they grow up? In other words, is the effort worth while? Does a truly congenital case of syphilis grow up to adult life and become a useful citizen to the community from a physical standpoint? I would like the doctor to discuss that point further.

DR. J. WHITRIDGE WILLIAMS, Baltimore: I am very much obliged to you for the generous discussion, but I am afraid that my answers to some of the questions will not be satisfactory.

What Dr. Studdiford said about the cord Wassermans is quite correct. I did not mention them here because I expect to consider them more in detail at another time.

In my series of 4,000 deliveries there were twenty-six positive cord Wassermans (I think that is the number). Now that does not mean anything. Some of the children whose cord Wassermans were positive at birth presented a negative reaction a month later, and when seen again at the end of a year it was still negative. On the other hand, babies which show a negative Wassermann at birth may develop a positive Wassermann later, and still later present clinical evidences of congenital syphilis. That is, I think, the universal opinion.

What we do at the Hopkins is this: At the end of two weeks, or the day before the woman is discharged from the service, she and her baby are sent to the Pediatric Department. There the baby is carefully gone over and is registered and is directed to return for subsequent treatment if necessary. A great many of the mothers and babies come back to the Children's Clinic, but recently I have adopted an innovation which has interested me very much, and which consists in getting the women and babies back to the Obstetrical Dispensary at the end of a year for two purposes: First, to ascertain what harm child-bearing has done the woman, and secondly, to see what she has gotten in the way of a child. We hope to continue this work, so that after a while we shall have accumulated a mass of material which will enable us to make very interesting statistical studies. For example, it will be very interesting to learn how many of the 1,000 babies born in 1919 are alive a year later? What

has happened to the women who had eclampsia? What has happened to the women whose hearts showed signs of decompensation during pregnancy and did well under rest in the clinic?

Again, it will be interesting to ascertain what proportion of the women are perennial breeders, and how many of them will be pregnant again when they return a year after?

Work of this character is not possible except with the aid of intelligent social service workers. They must go out and bring the women back to the clinic. In many instances they must bring them back by the nape of the neck, so to speak, give them carfare, and do lots of other things. I think we are getting them back in large measure, and in a few years I hope to be able to report on at least 75 per cent. of our mothers and babies. In this way we shall be able to get a line on the women with positive Wassermans as well as upon the babies who present a positive cord Wassermann.

In answering Dr. Studdiford I have answered Dr. Quigley.

In reply to Dr. Cohen I would say that at present the question, which is largely one of social service work, is being faced in connection with large clinics of one kind or another, but it is highly essential that this should be done throughout the entire community, and I believe that is being done to a very considerable extent in this city.

In the city of Baltimore last year a Bureau of Child Hygiene was established in the Health Department on a perfectly non-partisan basis. We had a red-blooded Democratic mayor, who believed in general that the spoils belong to the victors, but he was also a man of intelligence. Consequently, when the city started to organize the department, some of us went to him and said: Mr. Mayor, you have a great opportunity. If you put a man in this job, he will probably be a rot-gut politician. Now we advise you to place the Bureau in charge of an intelligent woman with no vote in the State of Maryland, with no political affiliations, and see what she can do. We believe that it will serve as a splendid example. The result was that he appointed a mugwump woman physician as the head of the department, which took the office out of politics. She is going to do great things, as she appreciates the needs of the situation. I shall not go into the details of this venture, as it is merely a beginning. It is going further.

I take it that the work of the Children's Bureau in Washington is along these lines. The idea now is to get the smaller communities to take up this question. They must provide the necessary doctors and pre-natal nurses. The public in general must be taught to realize that all public health questions are community matters and should not be expected to be solved by doctors alone, and as a matter of charity. The latter have

done and are still glad to do a great deal of work for the community. But the public rely too much upon them for doing its charity, and we must educate the people as to their share of the work.

At the present moment there is before the Congress a bill, which will be shortly reported out of committee, which provides that the general Government shall make a contribution to any State for the purpose of teaching women, more particularly in the country districts, the various things in connection with child-bearing and various other matters we have under consideration. The bill provides that up to a certain amount the general Government will duplicate the State appropriation for this purpose. I believe that is the way the thing will be done sooner or later.

What Dr. Druskin said about his material is interesting. In our material we have a good many Jews and find, as a rule, less syphilis in them than in the native-born whites, and very much less than in the negroes.

One thing about autopsies: You can get autopsies from outdoor cases as well as from indoor cases, if you take the trouble. I have an undertaker's license from the city of Baltimore which enables me to have the students bring dead babies from the tenement houses to the hospital for autopsy. All that is necessary is to say to these people: "Wouldn't you like us to bury your baby?" Generally they reply, "Yes, we would." Then we say: "All right, we will do so. Thank you." The student then wraps the baby in newspaper and brings it to the hospital, where we have a thorough autopsy. In this way we get the bodies without any difficulty and with the consent of the Health Department.

I have already answered in part Dr. Rongy's question about the cord Wassermanns, but his other question as to the treatment of congenital syphilis in the newly born child is something which I am not prepared to answer in detail, because we hand such babies over to the Pediatric Department or to the Syphilitic Department for treatment, and thus they go more or less out of my hands. They are, of course, always very difficult cases to treat, and that is still another argument for prenatal care, because if you treat the pregnant women properly you don't get the congenitally syphilitic baby. Finally, I can only say that in the case of pregnant women, if you get a positive Wassermann early enough, and give the women a course of diarsenol or salvarsan (ordinarily five injections) the Wassermann usually becomes negative. Then the patient rests a couple of weeks and comes back for a course of mercurial inunctions, followed by a course of mercurials by mouth. By the end of the treatment the Wassermann has become permanently negative, we get a good baby, and when you see the woman and baby months later both present a negative Wassermann and no clinical symptoms.

NECROTIC FIBROIDS COMPLICATING PREGNANCY AND THE PUERPERIUM.*

By GEORGE W. KOSMAK, M.D., F.A.C.S.,
NEW YORK CITY.

THE opportunity which presented itself to the writer of observing several cases of pregnancy complicated by necrotic fibroid tumors has prompted the presentation of his experiences to the members of this Section.

Fibroid tumors associated with or complicating pregnancy and labor are not unusual, but in the majority of cases they do not interfere with either process, and, as a rule, take an uneventful part in the involution of the uterus. In fact, comparatively large growths of this kind will disappear within a few weeks after delivery. The progressive increase in size of myomata during pregnancy has been ascribed to a hyperemia rather than an actual growth in the tissue substance, and, as the circulation of the uterus after delivery becomes adjusted, this hyperemia disappears and the tumors return to their original size of the period before pregnancy. In some instances, however, large fibroid tumors may act as a factor in dystocia and, if they are situated in the lower uterine segment and block the advance of the presenting part of the fetus, it may be necessary to perform a Cesarean section in order to deliver the mother. Whether this operation shall be combined with a hysterectomy depends on the character of the case. In some instances a large growth blocking or impacted in the pelvic brim, especially if subjected to trauma during labor, may point to the advisability of taking out the uterus because of the danger of subsequent infection of the mass with possibly a fatal result. In other cases hard uninvolved neoplasms may be allowed to remain *in situ* and take part in the general uterine involution rather than be removed by a myomectomy at this time. Such cases, however, should be carefully watched for several weeks after delivery and the presence of a continued temperature or evidences of infection should lead to the thought that possibly the mass has undergone necrosis and infection and needs to be subjected to operation.

American text-book writers, in discussing the subject of uterine fibroids complicating pregnancy, refer to the possibility of necrotic changes in these growths, particularly during the puerperium, but say very little about this complication before delivery. Hirst, in the Eighth Edition of his "Text-Book on Obstetrics" (p. 341), states

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 25, 1920.

that he has operated in four cases of necrotic fibroid during the puerperium. Williams refers to the possible necrosis of myomata during the puerperium, particularly if they have been subjected to prolonged pressure. He calls attention to the fact that even a spontaneous labor does not necessarily indicate that all danger is past, and that if fever and abdominal pain are present the advisability of subsequent laparotomy must be considered.

DeLee ("The Principles and Practice of Obstetrics," third edition, 1918), discusses the subject quite extensively and states that in the case of larger fibromata suppuration and gangrene may occur in rare instances, of which the so-called red degeneration is the most serious. DeLee believes that the infection, if not due to bruising during delivery, is invited by the wounding of the endometrium over the tumor and the fibroid may be converted into a necrotic, purulent mass, which breaks into the bladder or discharges *per vaginam*, a cure thus being effected. DeLee thinks that the dangers of myomata complicating pregnancy are misrepresented, because only the bad cases are considered worthy of publication. Even in the presence of pain and hemorrhage he is inclined to postpone operation until term, or near it, in those cases where the tumor apparently obstructs delivery. He is also inclined to advise an expectant course in the presence of infected myomata during the puerperium, in the hope that protective immunities will be developed and that precipitate laparotomy might cause fatal peritonitis. DeLee also states that myomectomy, although frequently done during pregnancy, is a very bloody operation, and refers to Winter's figures, that abortion follows in 17 per cent of the cases.

Scattered instances of sloughing myomata have been reported in the literature on the subject and a variety of opinions expressed as to the advisability of interference. It seems to me that DeLee's contention, namely, that non-interference should be practised in puerperal infected growths is rather extreme, for unless these are so situated that natural expulsion through the cervix can result it would seem more desirable to attack them from above if the diagnosis can be made before rupture of the mass into the peritoneal cavity takes place. I feel convinced that in the class of cases illustrated by that of Mrs. W., about to be described, a fatal issue would have followed if the infectious process had not been eliminated by the removal of the tumors. My experience, although limited to a comparatively few cases, is, that myomectomy at any period during pregnancy for painful, bleeding or infected uterine myomata can be carried out successfully without interrupting gestation. It is necessary to work quickly and to keep the patient well narcotized for two or three days after operation until all uterine contractions have ceased.

The following case reports deal with instances of necrosis of fibroids during pregnancy and the puerperium, and illustrate, I believe, the advisability of radical treatment where evidences of a breaking down of the tumors are present.

CASE 1.—Mrs. K., delivered by me in September, 1913, at the Lying-in Hospital, by vaginal Cesarean section (at a time when this was a popular operation) of a premature infant because of a central placenta previa with extremely severe hemorrhage that required immediate and radical treatment. She made a slow, gradual recovery from the shock and anemia, and after discharge from the hospital continued to have slight elevations of temperature which, a few weeks later, were marked by exacerbations, chills, abdominal pain and tenderness. Repeated examinations showed a large but firm uterus which was tender, and could not be freely moved about. In other words, the infectious process, which was evidently present, seemed to be limited to the uterus, and in view of the size of the same and its contour a diagnosis of an infected or necrotic fibroid was made. The patient's condition did not improve and an operation was finally decided upon and done four months after delivery, in January, 1914. On opening the abdomen the uterus was found irregular in shape and as large as the closed fist. The fundal portion was round and covered with fine dilated vessels. The remainder of the uterus was nodular, with a number of small, subperitoneal fibroids projecting from the same. Both ovaries were enlarged and sclerotic, and a good-sized cyst present on the left side. Myomectomy could not be done because of the large number of tumors, and the removal of the uterus and appendages, with the exception of the right ovary, was decided upon. The pathological examination of the excised uterus showed numerous fibroid tumors, subperitoneal and intramural, one of which was 5.5 cm. in diameter and showed extensive necrosis in its central portion. Microscopical examination showed that the fibrous tissue was chiefly of the hyaline variety and that the blood vessels of the entire organ had undergone considerable thickening. The patient was a young woman and it seemed a radical procedure to unsex her, but in view of the findings at operation and borne out by subsequent pathological examination, this seemed the only thing to insure a satisfactory recovery. The patient made a good recovery and all evidences of infection rapidly disappeared; the anemia subsided and subsequent examinations showed her completely restored to health. In this instance the fibroids were not of sufficient size to produce a dystocia, and whether their number had anything to do with the abnormality of the placental attachments is, of course, a question, but since that time I have had the opportunity of coming in contact with a number of other cases of pregnancy in which the diagnosis of possible

necrosis was made before delivery and myomectomy resorted to with good results.

CASE 2.—Mrs. E. (Lying-in Hospital, A. N. 51622, August 11, 1915), Para-i, admitted seven months' pregnant with complaint of increasing pain and tenderness in the left side of the abdomen. Examination of the rather thin woman showed a uterus about the size of a seven months' pregnancy and in the region of the left cornu a mass as large as an orange, which moved with the uterus and was extremely tender to the touch. The patient had observed this tender mass for several weeks and stated that it gradually became more painful and distressing and added greatly to her discomfort. At various times slight vaginal bleeding was noticed. The patient presented a moderate temperature and seemed very uncomfortable. A diagnosis of fibroid tumor with possible degeneration complicating the pregnancy, prompted exploratory laparotomy. On opening the peritoneal cavity the rounded and very vascular tumor was located in the region of the left cornu of the uterus, which also presented a smaller growth at the right cornu. The mass was readily shelled out, apparently of the subperitoneal variety, and the greater portion of the muscular layer of the uterine wall remained intact. The opening was closed with plain catgut and no contractions were observed during the operation. After operation the patient complained of severe pain, and a slight discharge of dark-colored blood was noted from the vagina. The abdominal wound healed by primary union, and the patient was discharged in good condition and delivered subsequently at term elsewhere.

CASE 3.—Mrs. W. (Lying-in Hospital, A. N. 69858), admitted to the hospital with a history of being about five months along in her first pregnancy. Shortly before admission she began to complain of abdominal pain, which became very severe, and forced her to seek relief at the hospital. Examination disclosed an intra-abdominal tumor with considerable tenderness over the same and some rigidity. Vaginal examination showed a tense bulging mass in the posterior cul-de-sac with the softened cervix in front. There was a moderate elevation of temperature and leukocytosis. An exploratory laparotomy showed the uterus enlarged to the size of a six and one-half months' pregnancy. On the left side, anterior to the broad ligament, was a firm, ovoid tumor, attached by a broad base to the uterine wall. The central portion of the same was soft and apparently ready to break through the serous covering. This was excised and the opening closed. Further exploration showed another tumor as large as the closed fist, firmly impacted in the pelvic brim, arising from the posterior wall of the uterus. In order to secure a proper exposure of this mass it was necessary to deliver the uterus out of the abdominal cavity.

A tumor was excised with difficulty, it being necessary to rotate the uterus considerably. It was attached by a broad base, on either side of which peritoneal flaps were made and the mass enucleated. The smaller tumor was also removed from the anterior face of the uterus, after which the organ was replaced and the abdominal wall closed. Only a moderate amount of bleeding occurred during the removal of the growths. Notwithstanding their multiple character and the handling to which the uterus had to be subjected, it was not thought advisable to do a hysterectomy, for even if abortion occurred the patient would still have her uterus for another perhaps more successful pregnancy later on. Two of the growths were shown by subsequent examination to manifest decided evidence of necrosis, and in one perforation seemed imminent. The patient was kept under the influence of morphine for several days after operation and made an excellent recovery.

Pathological report: "The specimen is made up of three different tumors. Tumor No. 1 is 9 x 7 x 6 cm. Section shows that one surface is covered with peritoneum and that it is composed for the most part of muscle tissue. There are a few areas of liquefaction throughout. Microscopical examination shows smooth muscle cells, which are very cedematous. There are a few areas of necrosis observed."

"Tumor No. 2 is 6 x 5 x 4 cm. Section shows considerable necrotic tissue in its central portion. Microscopical examination shows necrosis."

"Tumor No. 3 is composed entirely of fibrous tissue. Diagnosis—fibromyomata (necrotic)."

The pregnancy continued without interruption. The patient was seen at intervals of two weeks and went into labor spontaneously at term. She delivered herself without assistance and had an uneventful puerperium. The uterus involuted satisfactorily, there was no elevation of temperature, and she was discharged from the hospital on the fourteenth day, nursing her baby satisfactorily. This patient certainly would have been unable to go to term if not operated upon and would probably have developed a serious condition.

CASE 4.—Mrs. Y. B. (Lying-in Hospital, A. N. 65707). Patient, a para-i, was admitted to the hospital on October 31, 1919, with a diagnosis of placenta previa and possible uterine fibroid. She made little progress, and dilatation was favored by the insertion of a Voorhees bag. Delivery spontaneous and followed by moderate hemorrhage in the third stage. The patient was in considerable shock after delivery. Later on the peritoneal wound sloughed. Involution in this case was very slow and tenderness was continuously present over the lower abdomen, with an extremely foul vaginal discharge. The patient presented an anemia of moderate degree and continued to run a temperature of from 102°

to 103° F. On the night of November 17th she complained of severe abdominal pains. The lochia had become quite clean and although the abdomen was distended, there was no evidence of muscular rigidity. A round, tender mass, reaching to the level of the umbilicus, was palpated, but the vaginal fornices were free. There was a slight serous discharge present without odor. Patient's general condition was poor, pulse thin, expression anxious, tongue coated, and she complained bitterly of abdominal pain. The diagnosis lay between a sloughing fibroid, abdominal abscess and pedunculated tumor with twisted pedicle. Laparotomy done on November 19th. A gush of seropurulent fluid followed the opening of the peritoneum. The omentum was found plastered down to the top of the enlarged uterus, the upper portion of which presented a fibroid tumor mass in which perforation had occurred at a number of points through which purulent material was exuded. The intestines were lightly bound together in many places and flakes of lymph present. The only operation deemed advisable was a rapid subtotal hysterectomy, which was done. The stump of the cervix was anchored in the lower angle of the abdominal wound. The patient made a slow but satisfactory recovery.

By way of comment on this case, a better result would undoubtedly have been obtained if the woman had been subjected to earlier operation. Infection of the tumor was probably present at the time of admission, but the picture was clouded by that of the general puerperal infection, which was succeeded by a progressive necrosis of the tumor growth and subsequent perforation of the same, with general peritonitis. The bleeding before delivery must be ascribed to the fibroid, as no evidence of placenta previa was found. If a diagnosis of neoplasm had been made and likewise the presence of an infectious process, this, if attacked at an earlier date, might not have required ablation of the uterus.

CASE 5.—Mrs. E. F. (Lying-in Hospital, A. N. 69542), para-i, delivered spontaneously January 14, 1920. The patient seemed to be quite well after delivery, but on the fifth day the temperature rose to 106° F., and she continued to have regular afternoon elevations. Examination showed the uterus apparently undergoing the usual involution. The lochia was not profuse or foul, but a hard mass could be felt on the left side, which was slightly tender but sharply outlined, and did not give the impression of an exudate or an adnexal abscess. The writer made a diagnosis of intraligamentous fibroid which had undergone rapid necrosis, and on the twenty-fifth day an incision of the mass was made through a posterior colpotomy. A few ounces of clear fluid were evacuated, derived apparently from an intraligamentous cyst, but after further dissection a quantity of pus was obtained from the middle of the solid tumor. Culture subsequently showed

this to contain hemolytic streptococci. The blood culture at this time was sterile. No change in the course of the temperature and pulse resulted until the thirty-sixth day post-partum (eleven days after operation), after which the temperature gradually became lower until it reached normal on the forty-first day post-partum. The patient made an uninterrupted recovery with the exception of a superficial mammary abscess, which was incised and drained, healing uneventfully. Pelvic examination on the fifty-second day post-partum showed the uterus well involuted and quite movable, with a hard mass the size of an egg to the left of the uterus and apparently attached to the same. There was no tenderness and very little discharge. Blood counts made at intervals during the puerperium showed a moderate anemia with a definite leukocytosis—the white cells before operation going up to 24,800, with 85 per cent polys. This count gradually decreased after operation.

By way of comment, it may be stated that in this instance we were undoubtedly dealing with an intraligamentous fibroid which grew rapidly during the pregnancy, perhaps so much so that the circulation was insufficient and necrosis resulted. The presence of the hemolytic streptococci is likewise of interest, the fact that it remained localized and that no bacteremia resulted.

CONCLUSIONS.

1. Patients presenting myomatous tumors of the uterus associated with pregnancy must be carefully watched for evidences of local necrosis during the entire period of pregnancy and the puerperium, as the breaking down of the tumor may occur at any time during the period noted.
2. If necrosis is present in such cases the possibility of operation must be considered. No reference is made to tumors that may possibly obstruct delivery but are not in themselves involved in any degenerative process.
3. Exploratory laparotomy under deep anesthesia with enucleation of the growth and careful suture of the uterine wall can be carried out without extensive hemorrhage, producing abortion or premature delivery, if the patient is kept well narcotized after operation. Although recommended by various authors, hysterectomy need not always be done. Even if abortion follows operation the uterus will be left for possible future pregnancies.
4. Uterine myomata undergoing degeneration during the puerperium, as shown by local pain and tenderness, elevation of temperature, continuous red lochia and possible signs of peritonitis, should likewise be considered for exploratory operation, in the hope that the tumor may be enucleated before perforation of its capsule takes place. In the case of pedunculated growths, this procedure must likewise be followed. With multiple fibroids, hysterectomy must often be considered.

Discussion.

DR. A. J. RONGY, New York: I have had occasion to operate on four women for fibroids of the uterus during pregnancy. Three of them were in the first half period. One was in the eighth month. The only indication that I had for operation was extreme pain that could not be relieved by any medication. They were carefully watched and we went to the extreme in giving them opiates, but the pain did not stop, and the only alternative was to enter the abdomen and enucleate the fibroids. None of them aborted. All carried to term.

The question of fibroids associated with pregnancy is a very important one when a Cesarean section is performed. I feel that unless the fibroid can be enucleated easily without much bleeding and great disturbance during the performance of Cesarean section, as a general proposition, it should be let alone, because I think it will complicate the convalescence of the post-partum period and may endanger the life of the woman.

Recently I had a very peculiar experience: During the past year I saw two cases that had submucous fibroids prolapsed into the vagina in the second week of the post-partum period. One delivered absolutely normally, and I think she was a para-iv. She suddenly began to bleed and the doctor examined her and found a large mass filling up the entire vaginal wall, and a diagnosis of inversion of the uterus was made. I was called to see the patient at her home, and was almost inclined to agree with the doctor on the diagnosis, but further examination at the hospital disclosed it was a fibroid mass and the patient was put under an anesthetic and the growth removed.

I saw another case in Connecticut, also of a woman who was delivered normally, a para-ii, I think. She began to bleed profusely and the doctor found a large mass, almost the size of two fists, occupying the vaginal wall. She was in extreme condition. It was right around New Canaan. The patient was brought to New York, as the facilities at her home were not good. On examination I found a large submucous fibroid protruding from the uterus, which had been projected through the cervix. She also was in the second week of the post-partum period.

The interesting point about these two pregnancies associated with fibroid was the fact that they caused no disturbance whatsoever during the course of pregnancy, but that severe symptoms of bleeding and shock, almost endangering the life of the patients, developed during the second week of the post-partum period.

DR. SAMUEL W. BANDLER, New York: Dr. Kosmak's paper is extremely interesting and extremely important, but before we accept the

teachings which his paper would lead us to accept, I think we should have a little more definite information. In the first place, I have great respect for a submucous fibroid. I have very little fear during pregnancy regarding an intramural or subperitoneal fibromyoma or myoma. If by any chance it is so situated that the baby cannot be born because of the obstruction, we always have the possibility of a Cesarean section before us. However, the distinction must be made between fibromyoma and myoma. I believe that in 10 or 15 per cent. of all the cases which come to me and which I watch during the antepartum stage, I will find in one part or another of the uterus a growth which becomes more or less prominent after labor is terminated and the placenta is expelled.

After some further remarks along this line, the doctor said:

Myomata develop quite the same as the uterine muscle itself.

If we are to acknowledge that we should remove every subperitoneal myoma or fibromyoma in a patient before she reaches the stage of delivery, I think we are introducing a principle that might be accepted in too radical a form.

The last two cases which Dr. Kosmak quoted were the following:

In one a bag was used for suspected placenta prævia centralis, and in that patient a necrotic or inflamed fibroid was found with hemolytic streptococci. I believe we should take into consideration the possibility of infection of the tumor by our manipulations, also associated with the introduction of the bag, and I am not quite so certain that that condition was due solely to the necrosis. Was there any associated inflammation of the tubes or ovaries or peritoneum, because that is of great importance?

The other case was also one of possible infection.

It is very easy to say that a myomatous tumor or fibromyomatous tumor on section after operation shows necrosis. The question is: Is it really a necrosis? Or is it something associated with temperature, rapid pulse and marked leucocytosis?

I am not saying these things in criticism, but merely to acquire information.

If these subperitoneal tumors do necrose and do produce these dangerous conditions when a patient is in the ante-partum state, we should know it; and the fact that we may very likely speak of necrosis when it is not a genuine necrosis is, I think, something we should know also.

DR. GEORGE W. KOSMAK, New York: In answer to Dr. Bandler's inquiries: I did not present the detailed pathological reports of these cases because the recital would have required more time than I ought to take up, but in every instance the pathological examination showed a

true necrotic process present, and I referred to that fact in the description of the cases.

I think Dr. Bandler rather misinterpreted my conclusions if he assumes that I advised operation for the removal of fibroid growths that are not producing symptoms. I think I stated quite distinctly that it is only in the presence of symptoms that enucleation should be attempted. In the one case that had a general peritonitis, to which Dr. Bandler referred, which showed no adnexal involvement, a diagnosis of placenta prævia was made outside the hospital and I was not present when the patient came in and personally I had nothing to do with the insertion of the bag. I admit that this procedure may have been the cause of the introduction of the infectious material, but I am more inclined to think we were already dealing with an infection before the patient went into labor.

I want to call attention to the fact that in reciting the history of these cases briefly I did refer to the presence of temperatures, pain and other constitutional signs of infection. These tumors were not free from symptoms, and as Dr. Rongy noted in his cases, pain was a very marked symptom.

Strange to say, in the cases of fibroids complicating pregnancy that have come to my attention in which the fibroid was actually a factor in the dystocia, where it obstructed the entire pelvic inlet so that it seemed doubtful whether delivery could occur, and even in cases where Cesarean section had to be resorted to, pain was not a prominent symptom, nor did necrosis occur, but in the cases I referred to in which pain was prominent the fibroid was usually situated in the upper segment of the uterus and usually near the cornu. In the case in which the three fibroids were removed (CASE 3), the painful fibroid was the one that was situated at the uterine cornu. The one which I could make out on pelvic examination and which blocked the pelvic brim, did not seem to be tender at all, although that had also undergone necrosis; but those near the fundus, strange to say, were the ones that manifested symptoms of pain.

I trust that nobody will assume that I advise a routine myomectomy in every case of fibroids or myomata complicating pregnancy. That is far from my thought. I think in the majority of these cases, the fibroid or the myoma will go along and involution take place after the baby is delivered without any further symptoms. However, what I do want to call attention to is the necessity of watching these cases very carefully and if symptoms come on that point to an involvement of the growth, I believe these patients should be subjected to an exploratory operation and the growth removed. It can be done without aborting the patient and I think she stands a better chance than if you let her go on, with the possibility of an extensive sloughing mass being produced with perforation and general peritonitis.

SERUM SICKNESS AND SUDDEN DEATH FOLLOWING THE HYPODERMIC ADMINISTRATION OF ANTITOXIN.

By WILLIAM W. ROOT, B.S., M.D.,
SLATERVILLE SPRINGS, N. Y.

THIS paper is based upon one published by the author in 1910 in conjunction with Dr. E. C. L. Miller, of Detroit.¹

After the administration of diphtheria antitoxin, the physician may notice a local or diffuse eruption, likely to be accompanied by itching and, possibly, associated with fever, pain in the joints, and other symptoms. Such an experience is not an uncommon one, for it is here and there met with in the practice of all physicians, who have occasion to use large quantities of serum; furthermore, it is independent of the make of serum, has nothing to do with its antitoxic qualities, and is as likely to occur after the administration of antitetanic, antistreptococcic, antigonococcic, or of normal horse serum. It is a noteworthy fact that, in the list of cases in which antidiphtheric serum has been injected, more are reported from immunizing doses than from curative doses, despite the fact that very much more serum and many more injections are, of course, given for treatment than in prophylaxis.

"Perhaps the most important recent addition to our scientific knowledge," to quote from Park and Williams,² "has been the development of our conception of the fact and meaning of protein hypersensitiveness." While the great mass of research in this direction is of very recent date, as early as 1839 Magendie noticed that while rabbits showed no ill effects when injected intravenously for the first time (sensitizing dose), with egg albumin, a second injection (reacting dose) after a lapse of time was followed by serious and perhaps fatal disturbances. In 1894 the same results were noted by Flexner, and in 1902 by Richet, Portier and Hericourt in experiments upon dogs. To Richet we are indebted for the term "anaphylaxis," that is, opposite to prophylaxis, or to take the meaning of the Greek word, "not guarding against," instead of as in prophylaxis, "guarding against." This work has been repeated by Theobald Smith—1905—by Rosenau and Anderson, and by many others, such researches having been carried on largely upon guinea-pigs. In these animals a hypersensitive condition, called anaphylaxis or allergie, may accordingly be induced by the injection of blood serum, egg albumin, or other soluble proteid substances. This hypersensitive condition is manifested only after the second injection and is shown by certain characteristic symptoms, and even death may result. The first injection, although producing no symptoms, does something in the guinea pig which makes it especially sensitive or susceptible to the second injection. Such a guinea pig is, therefore, spoken of as being

hypersensitive, and the process of thus becoming hypersensitive as sensitization, and the hypersensitive condition is called anaphylaxis or allergie. An adequate explanation of this most curious phenomenon has not as yet emerged from the immense interest and labor expended upon the problem, but perhaps the most popular hypothesis has been that of Vaughan—1906—who assumes a proteolytic ferment induced by the injected protein in the tissues or blood of the injected animal. This specific ferment remains as a zymogen, but is activated upon a further injection of the same protein provided a time sufficient has elapsed for the formation of the ferment. All proteins contain a toxic and a non-toxic portion, and this activated ferment splits them up into these parts, the toxic portion causing the death of the guinea pig. This ferment has been termed "anaphylactin," the poisonous part of the split protein "anaphylatoxin," and the serious disturbances caused by the second injection "anaphylactic shock." Vaughan extends his hypothesis to include cases of intoxication accompanying infections as being produced by toxins liberated by specific proteolytic ferments acting on bacteria. This and other explanations appear now to be replaced by the belief that these ferments are non-specific and that their action depends largely on the absence of the antiferment content of the blood and tissues. The symptoms of anaphylaxis, as stated by Goodall,³ are different in different species of animals, but on the whole are the same for the same species no matter what protein is used for sensitization.

An exhaustive article on serum sickness, published by Colonel Goodall,³ of London, is based upon 3,502 cases stretching over a period of twenty-two years, and while the detailed study marks this as an important contribution to the literature, I am chiefly impressed that the essential facts and views are substantially as when I first became interested in this subject some nine years ago.

The large number of injections of diphtheria antitoxin, dating from its introduction in 1894, called attention to a train of symptoms not infrequently following the injection of serum in man. Their clinical significance was pointed out in 1905 by von Pirquet and Schick, who called the condition "Serumkrankheit," the translation of which name gives us "serum sickness." It is sometimes called "serum intoxication." A distinct period (three days to three weeks, oftenest about ten days), a so-called incubation period, elapses between the injection and the onset of the symptoms, which occur in perhaps one-quarter of the cases and which follow the first injection, although it is true that in a person who has received a previous injection they are liable to come earlier and, as a rule, the more recent the previous injection the earlier the serum sickness is apt to manifest itself. There may be noted any or all of the following: Skin eruption, either urticarial or erythematous, the former predominat-

ing, itching, oedema of the skin, fever, enlarged lymph nodes, marked leucopenia, pain in the joints with perhaps swelling and stiffness, a rise in blood pressure, vomiting, decreased excretion of urine with perhaps albuminuria.

As to the relation between serum sickness and anaphylaxis, we cannot say very much, since these conditions are so little understood at present, but both probably manifest the reaction of the system to the injection of a foreign proteid substance. The peculiarity of serum sickness is that it often follows a first injection, whereas anaphylaxis in animals is manifested only after a second injection. The query naturally arises, may man in some manner be sensitized, thus rendering him subject to these unpleasant symptoms when injected, and the researches of Rosenau and Anderson showing that the anaphylactic state can be transmitted by the female guinea pig to her offspring, not by the male, however, as also that the same condition can be induced in these same animals by excessive feeding of protein, suggests a similar possibility in the human. Goodall³ suggests that man may perhaps be sensitized by the degenerate products of his own tissues. In animals the first injection may be very small, one-millionth of a gram of egg albumin sufficing to sensitize a guinea pig, while a second injection must be quite large, 4 to 6 c.c. In man, the size of the dose does not seem to be of importance, but previous injections have this significance, that the more times a person has been injected with serum the more apt he is to have serum sickness. In institutions where children are injected with serum at regular intervals, the percentage of children showing symptoms of serum sickness increases with the number of times they have been injected. This is shown by Lucas and Gay,⁴ from observations made at the Children's Hospital, Harvard University. For the sake of convenience their figures are placed in the following form:

Injection	No. Injected	Total No. Reacting	Per Cent Reacting	REACTIONS CLASSIFIED			
				Children Showing General Symptoms		Children Showing Local Symptoms	
				No.	Per Cent	No.	Per Cent
1st	1,000	3	0.3	3	.3	..	..
2d	281	26	9.3	17	6.1	16	5.6
3d	103	15	14.6	11	10.6	13	10.0
4th	36	13	36.1	5	14.0	11	30.5
5th	25	12	48.0	6	24.0	11	44.0
6th	15	11	73.3	5	33.3	10	66.6

This table indicates (1) that the number of cases reacting increases with the number of times injected; (2) that this is true as regards general symptoms; and (3) also true, and to a more marked degree, as regards local manifestations. The apparent discrepancy in the table between the total number reacting and the sum of these manifesting general and local symptoms is accounted for by the fact that some children showed both.

It is of interest to note that the symptoms of serum sickness are found in certain persons as a

result of eating such foods as shell fish or fruits, or following the bites of some insects, and also that they bear a close resemblance to the acute infectious exanthemata.

Serum sickness is not to be regarded as dangerous; the symptoms pass away in a few days as a usual thing and leave the patient none the worse for the attack.

The preventive and therapeutic measures may be summed up as follows:

(a) Some of the proteid substances of the horse serum are eliminated in the preparation of the antitoxic globulins, and hence these are, perhaps, somewhat less liable to produce serum sickness. This view is, however, not in accord with results obtained by Weaver,⁵ who finds the reactions following the use of globulins not to differ from those following the injection of the whole serum in corresponding bulk. In any event, since the former contains a higher percentage of antitoxic units in the same bulk a smaller volume is administered, and, in consequence, symptoms of serum sickness are less likely to follow.

(b) A sensitized guinea pig can be desensitized by giving a small second injection, after which a large dose will not produce symptoms of anaphylaxis, this condition being called "anti-anaphylaxis"; hence the giving to patients of a small preliminary injection, before the main injection, has been tried and Vaughan,¹⁴ to prevent "anaphylactic shock" discussed below, states that in all cases of "reinjection" (made necessary from the fact that immunity from an injection lasts but for three to four weeks) after an interval of ten days or longer, a fraction of a cubic centimeter should be injected. If there are or are not untoward symptoms following this, after an hour or two any amount of the serum may be injected with safety and this procedure should be adopted, not only in all cases of reinjection, but when the patient has ever shown asthmatic symptoms.

(c) Calcium salts have been given by mouth to prevent serum sickness, but the reported results are conflicting.

(d) When serum sickness once appears it should be treated symptomatically.

* * * * *

A sudden death following the administration of serum is sometimes reported in the medical press. This occurs after the first injection, and there is no latent period. Rosenau and Anderson some years ago discovered 19 cases from the literature, and there must be others not reported. It is stated² that 1 in 20,000 primary injections of diphtheria antitoxin causes immediate anaphylactic shock, in which symptoms of respiratory embarrassment and convulsions develop, and that 1 in 50,000 of these cases terminates fatally. Such cases have been especially noted in asthmatics and especially where an attack of this disease is excited by the emanations from the horse, as also in the "Status Lymphaticus," as will ap-

pear presently. The symptomatology may include a rash with irritation, sensation of itching and burning, very acute oedema of the skin and of the mucosa of the nose, mouth and throat, urgent dyspnoea and cyanosis with foaming at the mouth, and in fatal cases inability to breathe may cause convulsions and coma, and the respiration stops before the heart ceases to beat. In such a case there are three possible explanations:

(1) Death was directly caused by the serum as such.

(2) Death was caused by the shock of operation (injection).

(3) Death was coincident.

In considering the first possibility we know:

(a) That the injection in man does in some cases produce the unpleasant symptoms known as serum sickness.

(b) That these symptoms usually come on during the second week following the injection, though in a person who has some time in the past been injected with serum the symptoms may come on earlier.

(c) That animals (especially guinea pigs) may be killed by an injection of serum, provided they have been sensitized by a previous injection of serum 10 days before.

All these would indicate that the serum may have caused the death. On the other hand we know:

(d) That serum sickness in man usually disappears quickly and leaves no bad results.

(e) That in order to kill animals, or even for them to show any disturbance, it is necessary that they be "sensitized" by a preceding injection of serum with an average interval of fully ten days.

(f) That the first injection in animals may be very small, one millionth of a gram of egg albumin sufficing to sensitize a guinea pig, while a second injection must be quite large—4 to 6 c.c.

(g) That in man the size of the dose does not seem to be of importance.

(h) That even in a thoroughly sensitized animal it is very difficult to kill in so short a time as five minutes.

(i) That in order to kill animals it is necessary to use doses very much larger than are used in man (about 5 c.c. in a 250-gram guinea pig, corresponding to about three pints of serum for a 150-pound man).

(j) That curative sera have been injected millions of times, and that the reports of bad results are extremely few.

Hence we can conclude that if this death was caused by the serum as such, it does not correspond to serum sickness nor to anaphylaxis, but must be due to some action of the serum as yet unknown.

In considering the second and third heads we know that there is a condition called "status lymphaticus," not infrequently associated with asthmatic symptoms, and characterized by enlargement and persistence of the thymus gland,

tendency toward abundance of subcutaneous fat, evidence of rickets, small size of the heart, thinness of arterial tissue, the presence of adenoids, enlarged tonsils and general enlargement of the superficial lymphatic glands. The "angioneurotic edema," given as a cause of death by Halsted,⁶ is no doubt but a prominent symptom of this general condition. In such a condition sudden death may follow injuries or shock or a slight operation no more serious than a hypodermic injection, or ensue without observable cause. For example, Dr. Oscar Richardson⁷ reports the case of a boy, aged nine, who died following the administration of ether, under which anesthetic an operation was performed for the purpose of properly treating a cut by a piece of glass in the region of the right knee. Upon autopsy a greatly enlarged thymus gland was found. Another case mentioned by Dr. Richardson was that of death following a successful operation for the removal of a tumor of the jaw, where the autopsy exhibited the condition known as "status lymphaticus." M. Stewart Smith, M.B., of London,⁸ reports a case in which a boy, aged eight months, was seized with what was termed a convulsive fit, in which the lips became blue and the extremities cold, the child dying just after being placed in a hot bath, which was immediately prepared. The thymus gland, removed at post-mortem, weighed 28½ grams, while its normal weight, according to Osler, is 7 to 10 grams. Still another case, which came under the observation of David D. F. MacIntyre, M.B.,⁹ was that of a child, three months old, on shipboard that was apparently in good health at 1 A. M. and died at 5 P. M. An enlarged thymus gland was found upon post-mortem.

Furthermore, cases are on record in which death has followed an operation no more serious than the pulling of teeth or the hypodermic injection of morphine, where no definite cause can be assigned. Wood, in his "Therapeutics," 13th edition, page 127, states that "cases have been reported in which one-fourth of a grain, or a somewhat larger quantity, of morphine, hypodermically injected, has been followed at once by syncope with struggling for breath and apparently imminent or even present death." The *Lancet*¹⁰ relates the case of a man, aged 26, who died following the extraction of four teeth. It was stated at the inquest that death was in no way due to the dental operation, the verdict being "Death through exhaustion from acute mania due to nervous fright." Dr. C. T. McClintock¹¹ states that from the hundreds of hypodermic injections into patients of nuclein solution which he has made, varying in amount from two or three to two hundred minims, in some five or six instances immediate, marked and alarming symptoms were noted. In one case a small injection was given to a young man in his back, immediately following which the patient fell headlong. The face was livid, and there was some unconsciousness for a few seconds, followed by recovery.

A recent article by Contract Surgeon Ewing¹² calls attention to the condition of "status lymphaticus" in many cases of sudden death in (a) infants (enlarged thymus), (b) patients under anesthesia, (c) persons bathing, (d) persons, following trivial mechanical trauma, including hypodermic injections of various substances, (e) precocious apoplexy in young adults, and (f) fulminating cases of meningitis, pneumonia and diphtheria.

To sum up:

The death may have been caused by the serum, but it does not accord with any known action of serum. Goodall³ states "it is not unlikely that a few of the cases in which an injection of horse serum has been followed by serious symptoms and even death, are not examples of anaphylaxis but are instances of the effects of some such accident or pathological state as the injection of air into a vein or the status lymphaticus." Kolle and Hetch¹³ say: "It may be shown that the use of small amounts of serum containing the necessary antitoxic dose, viz., 5 to 10 c.c. of high potency serum, even with small children, is absolutely harmless."

The death may have been caused by the condition known as "status lymphaticus" or some allied condition.

It may have been from causes unknown.

As the facts in hand are not sufficient to exclude definitely any one of these three possibilities, they should all be carefully considered before reaching a conclusion.

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Medical Society of the State of New York

Important Notice

Physicians who have changed their address, or anticipate changing it this autumn, are requested, if they have not already done so, to send their new address, telephone number, etc., to the Medical Society of the State of New York, 17 West 43d Street, so that it may be inserted in the Medical Directory which will be published in the late autumn.

District Branches

ANNUAL MEETINGS FOR 1920.

First District Branch—Thursday, October 21, in Poughkeepsie.

Second District Branch—Date not yet appointed.

Third District Branch—October, in Hudson.

Fourth District Branch—Tuesday, September 7th, in Saratoga.

Fifth District Branch—Thursday, September 30th, in Syracuse.

Sixth District Branch—Tuesday, October 5th, in Cortland.

Seventh District Branch—Wednesday, October 6th, in Rochester.

Eighth District Branch—Wednesday, September 8th, in Jamestown.

EIGHTH DISTRICT BRANCH.

ANNUAL MEETING, JAMESTOWN, N. Y.

Wednesday, September 8, 1920.

Morning Session, 11 A. M.

"The State Society; What of Its Future?" J. Richard Kevin, M.D., Brooklyn, President Medical Society of the State of New York.

A few remarks on "Encephalitis Lethargica," Edward Livingston Hunt, M.D., New York, Secretary Medical Society of the State of New York.

AFTERNOON SESSION, 2 P. M.

"The Effect of the Ligation of the Common Carotid Artery on the Brain Circulation," Raymond B. Morris, M.D., Olean.

"The Effect of Endocrines on the Results of Surgery," William Johnson, M.D., Batavia.

"The Importance of Group Work to the General Practitioner," Hugh B. Deegan, M.D., Tonawanda.

"The Present Status of the Cancer Laboratory," Harvey Gaylord, M.D., Buffalo.

FOURTH DISTRICT BRANCH.

ANNUAL MEETING, Y. M. C. A. BUILDING, SARATOGA.

Tuesday, September 7, 1920.

Morning Session, 10 A. M.

"The State Society; What of Its Future?" J. Richard Kevin, M.D., Brooklyn, President Medical Society of the State of New York.

"Practical Side of the Saratoga Mineral Waters," Douglas C. Moriarta, M.D., Saratoga.

"Diagnostic Value of the X-Ray in Medicine and Surgery," illustrated with lantern slides, Clarence A. MacMinn, M.D., Schenectady.

The Branch is invited by the Saratoga County Medical Society to be their guests at dinner at the Newman Lake House.

AFTERNOON SESSION.

"Glaucoma," G. Griffin Lewis, M.D., Syracuse.

"The Significance of Extra Beats in Regard to the Mechanism of the Heart," Carl F. Comstock, M.D., Saratoga.

"Botulinus Poisoning, Report of 32 Cases," Julius B. Ransom, M.D., Dannemora.

"Acute Purulent Conditions in the Thorax," Cassius D. Silver, M.D., Plattsburgh.

County Societies

MEDICAL SOCIETY OF THE COUNTY OF ERIE.

REGULAR MEETING, BUFFALO, N. Y.

Monday, June 21, 1920.

In the absence of the President, Dr. Lothrop, Dr. Arthur G. Bennett, Vice-President, called the meeting to order at 8.45 P. M., in the auditorium of the University of Buffalo.

The Secretary read the minutes of the regular meeting held April 26, 1920, also the minutes of the Council meetings held May 10th and June 21, 1920, all of which were approved as read.

Dr. J. N. Roe, Chairman of the Committee on Membership, presented the names of Drs. John C. Brady and Ella M. Bergtold, whom he recommended for membership, the recommendation having been previously approved by the Council.

On motion the Secretary was instructed to cast the ballot of the Society for the election of each of these applicants to membership.

Dr. John D. Bonnar, Chairman of the Board of Censors, made a brief verbal report of the activities of the Board and informed the Society that the Board had recently collected a fine of \$50 in one of the cases taken to court.

The Vice-President then introduced the speaker of the evening, Dr. Edward A. Sharp, who presented a splendid paper on "Encephalitis Lethargica." He treated this subject in a very able and thorough manner, giving practically everything that is known relative to it at the present time, especially as to causation, diagnosis and treatment. This paper was very thoroughly discussed by Drs. Putnam, Bowerman, Sherman, A. E. Jones, Samuel Ginsburg, W. F. Jacobs, John L. Eckel, Henry R. Hopkins, Jesse G. Levy, and Dunham.

At the close of the meeting a good-fellowship luncheon was served in the Library.

MEDICAL SOCIETY OF THE COUNTY OF GENESEE.

REGULAR MEETING, BATAVIA, N. Y.

Friday, June 11, 1920.

The meeting was called to order in the Elk's Club, and the following officers were elected for the ensuing year: President, Horace H. LeSeur, M.D., Batavia; Vice-President, Edward J. Phillips, M.D., Corfu; Secretary-Treasurer, Homer A. Harvey, M.D., Batavia; Delegate to State Society, Ward B. Manchester, M.D., Batavia.

Following the business session, Edward Clark, M.D., of Buffalo, read a paper on "Focal Infections and Diseases of Adult Life from the Standpoint of Preventive Medicine," after which supper was served.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

DISEASES OF THE INTESTINES AND LOWER ALIMENTARY TRACT. By ANTHONY BASSLER, M.D. 154 text engravings; 62 full-page half-tone plates (over 70 figures), some in colors. F. A. Davis Co., Phila. Price, \$7.00 net.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY, FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By RUSSELL BURTON-OPITZ, M.D., Ph.D., Asso. Prof. Physiology, Columbia University, New York City. Octavo 238 pages; 123 illustrations. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$4.00 net.

CARE AND FEEDING OF INFANTS AND CHILDREN. By WALTER REEVE RAMSEY, M.D. A Text-Book for Trained Nurses. 123 illustrations. Second Edition, Revised. Phila. and London, J. B. Lippincott Co. Price, \$2.50 net.

X-RAY OBSERVATIONS FOR FOREIGN BODIES AND THEIR LOCALIZATION. By Captain HAROLD C. GAGE, A.R.C., O.I.P., Consulting Radiographer American Red Cross Hospital of Paris; Radiographer in Charge Military Hospital, V. R. 76, Ris Orangis and Complementary Hospitals. St. Louis, C. V. Mosby Co., 1920. Price, \$1.75.

RADIOGRAPHY IN THE EXAMINATION OF THE LIVER, GALL BLADDER AND BILE DUCTS. By ROBERT KNOX, M.D., Hon. Radiographer, Kings College Hospital, London, Eng. A series of articles reprinted from Archives of Radiology and Electrotherapy, 1919. Sixty-four illustrations. St. Louis, C. V. Mosby, 1920. Price, \$2.50

HEART TROUBLES; THEIR PREVENTION AND RELIEF. By LOUIS FAUGERES BISHOP, M.D. Crown 8vo, cloth, 435 pp. 30 full-page half-tone plates, besides text illustrations. New York and London, Funk & Wagnalls Co. Price, \$3.50 net.

THE CATARRHAL AND SUPPURATIVE DISEASES OF THE ACCESSORY SINUSES OF THE NOSE. By ROSS HALL SKILLERN, M.D., Prof. Laryngology Medico-Chirurgical College, Post-Graduate School, University Pennsylvania. Fellow American College of Surgeons, American Laryngological Society, N. Y. Academy of Medicine, etc. 300 illustrations. Third Edition, thoroughly revised and enlarged. Philadelphia and London, J. B. Lippincott Co., 1920. Price, \$6.50.

LA GYNÉCOLOGIE. Par F. JAYLE, Chef de Travaux Cliniques de Gynécologie de la Faculté à L'Hôpital Broca. Tome I. L'Anatomie Morphologique de la Femme. Illustré de 530 Dessins en 308 Figures par Henri Bellery-Desfontaines, Henri Rapin et Gabriel Reigner. En Vente à Paris à la Librairie Médicale. Masson & Cie, et la Librairie D'Art René Hellen, 120 and 125 Bd. Saint-Germain.

HUMAN PARASITOLOGY, WITH NOTES ON BACTERIOLOGY, MYCOLOGY, LABORATORY, DIAGNOSIS, HEMATOLOGY AND SEROLOGY. By DAMASO RIVAS, B.S., Biol., M.S., M.D., Ph.D. Octavo, 715 pages, 422 illustrations. 18 plates. Phila. and London, W. B. Saunders Co., 1920. Cloth. \$8.00.

A TEXT-BOOK OF DERMATOLOGY. By J. DARIER. Authorized translation from the Second French Edition, Edited with Notes by S. Pollitzer. 769 pages, 204 engravings, 4 colored plates. Phila. and New York, Lea & Febiger, 1920. Octavo. Cloth, \$8.50.

A MANUAL OF PHYSICAL DIAGNOSIS. By AUSTIN FLINT, M.D., LL.D. Eighth Edition, revised by Henry C. Thatcher, M.S., M.D. 12mo, 362 pages, illustrated. Phila. and New York, Lea & Febiger, 1920. Cloth, \$3.00.

SYMPTOMS IN THE DIAGNOSIS OF DISEASE. By HOBART AMORY HARE, M.D., B.Sc. Eighth Edition, thoroughly revised. Octavo, 562 pages, 195 engravings, 9 plates. Phila. and New York, Lea & Febiger, 1920. Cloth, \$6.00.

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY. By R. B. H. GRADWOHL, M.D., Director Gradwohl Laboratories, Chicago and St. Louis. Director Pasteur Institute of St. Louis and A. J. BLAIVAS, formerly assistant in chemical laboratory, St. Luke's Hospital, New York. Second Edition. 75 illustrations. Four colored plates. St. Louis, C. B. Mosby Co., 1920.

INTERNATIONAL CLINICS, A QUARTERLY OF ILLUSTRATED CLINICAL LECTURES AND ESPECIALLY PREPARED ORIGINAL ARTICLES ON MEDICINE SURGERY, NEUROLOGY. Vol. II. Thirtieth Series, 1920. Philadelphia and London, J. B. Lippincott Company.

DIAGNOSIS AND TREATMENT OF BRAIN INJURIES WITH AND WITHOUT A FRACTURE OF THE SKULL. By WILLIAM SHARPE, M.D. 232 Illustrations. Published by J. B. Lippincott Company, Philadelphia and London. Price \$8.00.

DISEASES OF CHILDREN. Presented in 200 Case Histories of Actual Patients Selected to Illustrate the Diagnosis, Prognosis and Treatment of the Diseases of Infancy and Childhood. Introductory Section on the Normal Development and Physical Examination of Infants and Children. By JOHN LOVETT MORSE, A.M., M.D. Third Edition. By W. M. Leonard, Publisher.

Book Reviews

A TEXT-BOOK OF PHYSIOLOGY, for Students and Practitioners of Medicine. By RUSSELL BURTON-OPITZ, M.D., Ph.D., Asso. Prof. Physiology, Columbia University, N. Y. Octavo Vol., 1185 pp., 538 illustrations. Phila. and London, W. B. Saunders Co., 1920. Cloth, \$7.50 net.

In the preface to his book Dr. Burton-Opitz says: "Together with Anatomy and often with an unmistakable attitude of charity, Physiology has been regarded as one of the foundation stones of modern medicine. It seems to me, however, that this milestone has been passed some time ago, and that the sole hope of modern medicine is Physiology, or, in a larger sense, the experimental sciences." If the milestone to which Dr. Burton-Opitz refers has not yet been passed, it is certain that the publication of his valuable treatise will hasten the day when it is. The first chapter is devoted to a discussion of "Living Substance." In the first paragraph of the chapter the definition and scope of the author's subject are made clear. A rather brief chronological table of the scientific contributions which have formed the basis of modern physiology is also included in Chapter One.

The author has very wisely devoted two full sections to the physiology of muscle and of nerve. The nature of the nerve impulse itself, ever an elusive and mysterious problem, has been well treated, inasmuch as the author has clearly presented the views of those who maintain the impulse to be of a physical or of a chemical origin.

The section on blood and lymph contains an excellent chapter on immunity, which includes a discussion of Ehrlich's "Side Chain" Theory and of Anaphylaxis.

Part III of the book is devoted to the circulation of the blood and opens with a chapter on the comparative study of the circulatory system, in which the evolutionary relationship between the cardio-vascular structure in the lower animals and in man is shown. It is to be regretted that in one chapter, that dealing with the arrangement of the musculature of the heart, the illustrations and cuts selected should be so poor. In Figure 131, on page 266, the view of the heart is from the dorsal side, which greatly reduces the value of the cut as an illustration of the course of the fibers.

Part IV, devoted to Respiration, Voice and Speech, is particularly well written, and the same can be said

for Part V, dealing with the Nervous System, and Section XXV, which is concerned with internal secretions. Chapter 84, on the mechanics of digestion, is quite thorough, although some reference in the text to Figure 513, on page 1008, would be helpful.

In general, it may be said that Dr. Burton-Opitz's book is characterized by unusual thoroughness and by evidence of painstaking care to secure clarity of presentation. This the author has accomplished, not alone by simple and direct English but by an abundance of very fine and carefully selected illustrations and cuts. The literature in physiology, especially of recent years, has evidently been thoroughly searched, so that those who consult the work might be certain of securing, on disputed points, the latest views. An extensive reference to this literature and an unusually complete index add much to the value of the book. F. E. M.

PASTEUR—THE HISTORY OF A MIND. By EMILE DUCLAUX. Late member Institute of France, Professor Sarbonne and Director Pasteur Institute. Translated and edited by ERWIN F. SMITH and FLORENCE HEDGES, Pathologists of U. S. Department Agriculture. Octavo, 363 pages, illustrated. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$5.00 net.

Emile Duclaux, pupil, friend and life-long associate of Louis Pasteur, Professor at the Sorbonne and Director of the Pasteur Institute, has written a book of unique interest and value. Although published in 1896, the volume is now for the first time available in English, thanks to the zealous interest of Dr. Erwin F. Smith, pathologist in the U. S. Department of Agriculture.

Duclaux has given to the world not so much a biography, in the ordinary meaning of the term, as a history of the mind of Pasteur, tracing with admirable fidelity and clarity the logical sequence of Pasteur's discoveries, from his early studies on crystallography to his monumental work on the prevention of rabies. "It is less for the purpose of making an eulogy than for purposes of instruction that I have attempted to write his history, in which I set aside all that relates to the man that I may speak only of the savant. I have desired, in the ensemble as well as in the particulars, to give the genesis of his discoveries, believing that he has nothing to lose by this analysis, and that we have much to gain."

The first part of the book is devoted to Pasteur's researches in crystallography; the second part to his studies on lactic and alcoholic fermentations. Then follow, in order, a consideration of his investigations on spontaneous generation, wines and vinegars, the diseases of silk-worms, beer, the etiology of microbial diseases, viruses and vaccines.

The book is well illustrated, the reproductions of photographs of Pasteur taken at various periods of his life, being especially admirable. The translator has given in his introduction an excellent biography of the author and has included, at the end of the volume, a brief, annotated biography of persons mentioned in the book. W. W. OLIVER.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By GEORGE W. NORRIS, M.D., Asst. Prof. Medicine Univ. Pennsylvania, and HENRY R. M. LANDIS, M.D., Asst. Prof. Medicine Univ. Pennsylvania, with a chapter on Electrocardiograph in Heart Disease, by EDWARD KRUMBHAR, Ph.D., M.D., Asst. Prof. Research Medicine Univ. Pennsylvania. Second Edition, thoroughly revised; 844 pages, 433 illustrations. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$8.00 net.

The second edition of this work impresses upon the reviewer the idea of thoroughness and accuracy. Nothing seems to be omitted concerning the normal and abnormal conditions of the organs within the chest. Parts I and II define, differentiate and interpret the methods and terms used in the examination of the respiratory and the circulatory systems. The most minute and detailed explanations are given of the various sounds heard over the chest, and this complicated material is presented in a clear, concise, readable and

instructive manner. The various methods of instrumental examinations are carefully explained and the findings made clear. With this thorough presentation of the normal conditions, it is not so difficult to recognize and understand the abnormal states presented in Parts III and IV, which deal with the diseases of the respiratory and circulatory systems.

The diagrams and illustrations with their explanatory notes are excellent. A feature of the illustrations is the presentation of photographs of frozen sections of the cadaver. These specimens most accurately represent the actual diseased conditions and are instructive and self-explanatory. Infinite care, clearness, conciseness, with completeness, characterize this work, which is one that every person interested in medicine, and especially in chest conditions, should have in his library for study and reference. It is undoubtedly one of the best books published on conditions of the organs in the chest. HENRY M. MOSES.

THE TRANSMUTATION OF BACTERIA. By S. GURNEY-DIXON, M.A., M.D. Cambridge University Press, 1919. Price, \$3.25.

The possibility of the transmutation of one species of bacteria into another is not merely of academic interest to the biologist and bacteriologist but is important to the clinician. In this volume, the author has collected much of the available information on this subject and has stated clearly and briefly the evidence for and against transmutation. He has shown that bacteria are subject to the same fundamental laws as are all other forms of life, and that the many species and varieties recognized today have been derived from a common ancestor. Transmutation differs from evolution only in the rapidity of the change. Concerning evolution there can be no doubt, but the difficulties of proving a rapid transmutation are so great that most of the alleged instances are subject to criticism. The classification of bacteria rests upon differences in morphology, fermentation and serological reactions, virulence and pathogenicity. Given strains show a marked tendency to respond to changes in environment by variation in one or more of their species characteristics. Moreover, there are groups, as the streptococcus and colon-typoid-dysentery groups, which contain many members varying in minor respects, so that classification is difficult unless one bears in mind that there are a few large groups with constant basic characters, and one must prove change in these to prove transmutation. Since classification is based on characters which are themselves variable, the process of identification is made all the more difficult. One gathers the impression that the author's verdict is the Scotch one, "not proven." He would have us think of bacteria as undergoing evolution today as of old. Transmutation is possible and probable but not proven. The author concludes with a chapter wherein he shows the marked resemblance between ferment and bacterial action and suggests that the two are identical. It is an interesting topic and really merits a volume to itself. E. B. SMITH.

Deaths

FRANK E. BROWN, M.D., Brooklyn, died June 23, 1920.

GEORGE LEVI BROWN, M.D., Buffalo, died July 8, 1920.

OTIS H. DECK, M.D., Herkimer, died June 13, 1920.

FREDERICK R. GREENE, M.D., Bennington, Vt., died June 6, 1920.

JOSEPH P. GUINAN, M.D., Lima, died May 31, 1920.

WILLIAM FRANKLIN HARPER, M.D., New York City, died June 16, 1920.

WALTER HENRY HOLDRIDGE, M.D., New York City, died July 3, 1920.

JOHN J. KENNY, M.D., New York City, died July 24, 1920.

G. FREDERICK PITTS, M.D., Warwick, died July 22, 1920.

WILLIAM AUSTIN TOMES, M.D., Brooklyn, died June 28, 1920.

NEW YORK STATE JOURNAL OF MEDICINE

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Vol. XX.

SEPTEMBER, 1920

No. 9

EDITORIAL DEPARTMENT

CALL TO DUTY.

THE Legislature of the State will meet again a few short months hence. To judge by past experience, numerous measures will be demanded by the public at large, the enactment of which will influence the physician and the practice of his profession. What are the facilities offered by the medical profession to the lawmakers to aid them in framing such necessary legislation with due regard for the interests of the profession concerned, and what are the safeguards to prevent the passage of laws contrary to the best interests of public health and preventive medicine or of those which may lower the standards and the dignity of the medical profession, making it a less desirable vocation with consequent effect on the nation's health and well-being?

National, State and county societies have larger and smaller standing and special committees to deal with these questions, and they labor as well as their time, their knowledge of the subject and their facilities permit. Written and voiced criticism of their effectiveness is constantly growing in volume and bitterness, and the frank admission of some of these committees would indicate that their influence does not enjoy the complete confidence of the profession and also that it is insufficient to cope unaided with the problems in question. In consequence of this, perhaps, several societies have been formed, the apparent sole object of which is to oppose legislation inimical to the best pecuniary interests of the medical profession.

In brief, all the organized effort of the profession in recent years has been directed solely and alone in opposition to proposed laws, and some of these efforts are accused of being in the interest of the physicians' income rather than for the benefit of either public good or professional standing and dignity. These arguments are usually hurried statements

of prophesy made with the evident intention of saying as much as possible in the short allotted time, rather than a concise presentation of fact rendered slowly with telling effect, and unmistakable evidence of the weight of public opinion behind it. There is scarcely a single instance during the last decade in which such committee or society has attempted to introduce laws in the interest of public health, preventive medicine or the standard of the physician, or where they have afforded strong and potent aid in the passage of such laws introduced by others. In natural consequence, the appearance of physicians' committees at public hearings on bills is now associated by the legislators with set opposition to proposed legislation of any kind, and pecuniary rather than altruistic motives are often inferred. As the result of this, the influence of the arguments of the physicians' committee has progressively lessened in value.

Several years ago, based on the original suggestion of Dr. Rooney, Chairman of the Committee on Legislation, the establishment of a more elaborate Bureau was proposed, the object of which was to be the formation of a constructive policy in public affairs as they affect public health and medical practice. It was hoped that this establishment under the auspices of the State Society would have the complete confidence of the medical profession and that as the result of its constructive work it would reclaim the respect of the Legislature, and obtain also the support of the public. Such an undertaking would require a far greater annual expenditure than the Society could afford under the present income, and the suggestion to secure funds from other sources was not approved by the House of Delegates.

The State Society is the logical, and, in fact, the legal representative body of the medical profession in the State, and if it sees the need, it certainly can organize and support a suitable Bureau, directed by the peers of the profession and conducted by an efficient, properly compen-

sated medical, legal and clerical force. It could, under most favorable auspices and with most eminent assistance, study the problems, suggest the necessary laws and aid in their passage, for the lasting betterment of public health, preventive medicine and the maintenance of professional standards and dignity; a constructive legislative policy, helpful to the lawmakers and certain to command the respect and confidence of the public, the profession and the Legislature.

In the meantime, and until the representative organization of the profession has perfected a system to relieve the individual of constant duty in this regard, it is absolutely essential that every physician in the State of New York devote a certain amount of time and attention to the legislative matters concerning his profession, from now until at least the close of the next legislative session.

Measures concerning compulsory health insurance, the establishment of health centers by the State, and the annual reregistration of physicians, will certainly be presented to the Legislature for consideration. These alone are sufficient to give every physician ample material for study and propaganda. If interested in public welfare and in the future of his profession, it is his imperative duty to acquaint himself with the full meaning of these proposed laws, to weigh carefully the widely expressed opinion of the profession as a whole, and then to use his facilities with the same zeal as if the matter were one of grave personal concern, which, all said and done, it is. Use your personal weight and influence in the selection of members of the Legislature, seek the acquaintance and respect of every member of both houses you can secure. Write short, forceful, convincing letters to those you don't know. Make these representatives of the people acquainted with what these laws will mean to the citizens of the State. This is not a new request. You have heard it repeatedly at meetings, it has been written to you, telegraphed to you and aimed at you before through the journals. To what extent it has made an impression is shown by the following portion of a letter from a member of the last Legislature: "If the members of our State Society and our profession as a whole could only appreciate the situation at Albany, I do think they would adopt different tactics in endeavoring to encourage the passage of or the suppression of measures which vitally affect the people of our State. It would be very easy to control the legislation here affecting our profession if they would only get in personal touch with their Assemblymen and Senators. We have measure after measure coming before us for consideration, measures which are most vicious in every character when considered in connection with the public health interests of our State. We legislators hear nothing whatsoever from the medical men at home. As a rule the legislators believe these measures must be all right or you would at least call their attention to their good or bad merits; on the other hand, such measures

as the Chiropractic Bill are backed by most extensive propagandas. We not only receive many personal letters and petitions, but in each mail communications come from two or three clergymen asking for the passage of the bill. I have seen these letters and petitions by the dozen, but have not seen a single letter from the family physician stating or condemning the viciousness and danger of such measures."

The physician comes into close personal contact with more voters than do most persons in other vocations; he has a host of people who are grateful to him and believe in his integrity and wisdom. If he will, he can exert a most potent influence at the polls, an argument which will command absolute attention of the politician who might not be moved by more altruistic arguments.

The officers you have selected to conduct the affairs of your Society serve you faithfully with full recognition of the responsibilities they have assumed. They, in turn, deserve support, and they urge respectfully and firmly that you respond fully to this call to duty in the interest of the people of our State and of the profession whose ideal it is to serve them to the best of their ability.

PUBLICITY.

THE frequent use of publicity by those who seek personal exploitation is probably the reason why the medical profession has not taken advantage of this means of making better known to the public what they should know of the advances in medical science.

The following article from the editorial page of the *Evening Sun* is a case in point:

"A few years ago the news that the State of New York had bought nearly a quarter of a million dollars' worth of radium to use in fighting cancer would have attracted wide note. The absorbing importance of other affairs has crowded both radium and cancer to the very edge of the field of public attention. Matters like the supply of food, shelter, clothing and heat have claimed the thoughts of the great majority of the public.

"For the authorities of the State to pursue the effort at cancer cure at the present time, they must have expectations quite free from the fever of sensationalism that sometimes disturbs the balance of investigators' thought. The continuance of research work has much to do with its success, so much that lapses in the present period of scarce funds and diverted attention might put off indefinitely the attainment of results near at hand. It is well that cancer study, in spite of other matters, is to go on."

Impartial publicity in the interest of public health such as that by the American Society for the Control of Cancer and in a more general way by some of the hospitals in the interest of their endowment funds, will do much to create respect and enthusiasm for the legitimate efforts of advance by the medical profession.

Original Articles

THE RELATIONSHIP OF THE EXTERNAL APPEARANCE OF THE BODY TO DISEASE.*

By GEORGE DRAPER, M.D.,
NEW YORK CITY.

IN 1916, during the epidemic of poliomyelitis, my attention was arrested by the similarity in the appearance of afflicted children. Young adults ill of the disease likewise bore striking resemblance to one another.¹ In families where two or more members were stricken, the family likeness was intense and of the character which had been associated with poliomyelitis victims. As a rule, where a single child succumbed it differed in physical appearance from its brothers and sisters. Such observations recurred so frequently and persistently that, while still studying intently the habits of the infecting agent, one began to wonder about the question of specific susceptibility.

Subsequent experiences with central nervous system syphilis reported in the spring of 1917 before the Society of Clinical Investigation, but never published, and still more recent with epidemic cerebrospinal meningitis in the army, have emphasized the need for some practical method of studying to better advantage the susceptibility side of infectious disease.

One has but to glance through the table of contents of those journals which are concerned with infectious disease problems to realize that the best thought and effort of the time for the past ten years has been directed at the infecting agent and immunological reactions carried out *in vitro*, or in animals. Essential knowledge has been added by these studies. Yet even with the classification of meningococci and pneumococci practically available, we still lack the key that determines selection of the individual and hence the distribution of the epidemic.

Nothing is more striking during the peak of a meningitis epidemic, when the virulence of the infecting agent is presumably at its height and the organism is universally disseminated throughout the camp, than the curious spotty distribution of the cases. One man in a tent will succumb and of his half-dozen tent mates two or three may show positive cultures from the nasopharynx. Of the same nature also is that amazing difference in intensity of the disease in different individuals. Of two men, both infected at the same period of the epidemic and with identical strains of the organism, one may die in a few hours and the other may have such a mild course as almost to escape detection. Similar phenomena were to be noted in the re-

cent epidemic of the respiratory diseases. Constant investigation of the bacterial agents and pneumococcus grouping has not strengthened our position greatly in the practical matter of prevention and treatment of these afflictions.

Those who have been trained in bacteriology realize that we classify bacteria largely according to their behavior and external appearance under certain arbitrary and artificial conditions of growth and serological relationship. Now, while pursuing these necessary and important studies as vigorously as ever, is there possibly any information concerning susceptibility to be gained by an inquiry into the quality and character of the infected individual?

Attempts to make such inquiries have been made by physicians since the earliest days of medicine, and the studies directed to this end are many and various. Hippocrates pointed out the great differences in the appearance and characteristics of people who live in flat, soft country with equable climates or more harsh and rugged districts, and discussed their comparative strengths and weaknesses. The history of epidemics is full of references to striking divergencies in susceptibility of races to certain infections. In 1854, James Bird,² wrote that the negro was almost exempt from destructive fevers to which whites on the west coast of Africa are susceptible; and Livingston,³ the explorer, in 1857, noted that "syphilis seemed incapable of permanence in any form in persons of pure African blood, but that in individuals of mixed bloods its ravages were severe." The suggestion that mixed races develop susceptibility of which pure types were incapable appears very frequently in the history of epidemic disease. Perhaps it is a phenomenon which may hold analogies to the varying susceptibilities of individuals. In this connection, and worthy of note, are the statistics found in the symposium on the influence of heredity on disease reported in the proceedings of the Royal Society of London in 1909.⁴ Here it was shown that among 6,000 cases of tuberculosis there was a distinct excess of individuals with brunette traits, but that the disease appeared earlier among blonds. Such criteria by themselves, however, are not sufficient to be of practical usefulness in the matter of recognizing susceptibility or disease tendency. Nevertheless, while numerous methods of classifying human beings for this purpose have been suggested, the subject has not held the interest of investigators as closely as have those problems to which is applicable the technique of the laboratory of pure science.

Much valuable work has been done, however, and it is imperative that investigations should be pursued further in the effort to elucidate the obscure factor of susceptibility. In 1900 Nacke⁵ reported the anthropometric study

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

of a series of cases of tabes and paresis. He found on the one hand that there was a definite relationship between the long-legged, lanky, narrow-chested, hatchet-faced, asthenic type and the presence of tabes; and on the other a greater frequency of paresis in the shorter, thickset, round-headed individuals. In 1912 Bean⁶ divided mankind generally into two types, according to the predominance of tissues springing from different embryonal layers. The mesothelial types (meso-onto-morphs) are those who have greater development in bone, muscle and other connective tissues. Whereas the epithelial types (hyper-onto-morphs) are less developed in this way and more in brain, lungs and alimentary tract. Bean concluded that great development in either class of tissue rendered it more susceptible to disease. He describes the meso-onto-morph or mesotheliopath as of medium size, stocky, extremities long, trunk short, feet and hands large, face large in comparison to the head, intestine long, measuring 20 to 25 feet. The hyper-onto-morph or epitheliopath is tall and slender, or small and delicate. The trunk is longer in proportion to extremities, the face less large in comparison to the head size, the nose long, high and narrow, the eyes near together and their slits wide, the intestine is short, measuring 12 to 15 feet. Bean found that practically 100% of tuberculosis cases and 79 out of 87 Central Nervous System disease cases were found in the hyper-onto-morph groups. Syphilis occurred 31 times in hyper-onto-morphs to 14 times in meso-onto-morphs. In general, the epitheliopaths were susceptible to disease of lungs, nervous system and alimentary tract and the mesotheliopaths to diseases of circulatory system and kidneys.

In 1914⁷ Emerson reviewed and discussed the so-called condition of status lymphaticus in adults. This contribution presents a careful description of the type which is now so well known, and then certain figures indicating the frequency with which the type was found in association with various diseases. Thus of the autopsied cases of typhoid 23.07% were status; of acute infective endocarditis 19.51% were status; of epidemic cerebrospinal meningitis, 48.27% were status; of tuberculosis meningitis, 3.80% were status; while of lobar pneumonia but 2.96% were status. The difference in susceptibility of the meninges in this type to the meningococcus and the tubercle bacillus is interesting.

In 1915 Goldthwait⁸ described two main types of human beings, the herbivorous and carnivorous. They appear to be identical with Bean's two groups—the carnivorous corresponding to the hyper-onto-morph. Each type, Goldthwait believes, has its own disease potentialities.

It is clear that all these attempts to classify the race depend roughly upon the relationship of height and weight or lengths and breadths. There is no standard pattern or measuring stick which can be applied to the individual. Anthropologists, too, have sought the normal man, largely without success, so that such a standard is denied us. In casting about for some firmer point of departure from which to launch a study of the subject of disease, man, the relationship between known pathological states of certain endocrine glands and body form presented itself as holding some possibilities. In the past we have looked upon the acromegalic, the exophthalmic, the cretin or the Addison's disease case as objects of isolated pathological interest, or have viewed the circus freak, giants, bearded ladies and piebald men as subjects who have capitalized their pathological qualities for commercial purposes. Is it not possible that in a careful study of the anatomical characteristics of these unfortunates we may find criteria of modeling, dentition, pigmentation, proportion and hair distribution which may be applied in analyzing the blendings which produce those infinitely subtle modifications which differentiate so-called normal, healthy people?

The thing we speak of as personality includes more than a man's psychic attributes, for individuals are just as distinct anatomically, physiologically and immunologically as they are mentally. It is to a consideration of these four great panels of personality that we should turn our attention, if we would understand and classify human beings advantageously. We possess today many methods of investigation applicable to the study of each panel, but none are complete and all are badly co-ordinated. Physicians, in general, often find that knowledge of a person's anatomical personality gives a good clue to one or more of the other panels. Upon this vague understanding has rested for years the useful, yet indefinite, thing known as "the clinical hunch," or more properly the constitution. Can this be analyzed, measured, classified? And just as we recognize glandular disease from the anatomical panel of the



FIG. 1.

Typical case of acromegaly used as the standard of known pituitary disease in this series.

acromegalic, Addison's cases and freaks, may it not be possible by refining our observations to recognize, first, mild glandular disturbances and later those balances of glandular interaction which make for the differentiating characteristics in the personality panels of healthy individuals?

A plan for studying patients from this point of view was published by the writer⁹ last year, and many others have been working in the same direction. Two of the most suggestive publications dealing with this subject recently are those of Arthur Keith¹⁰ on "The Differentiation of Mankind Into Racial Types," and of F. A. Crookshank¹¹ on "Mongols." The former believes that the pituitary gland expresses itself more strongly in the Caucasian, with its "sharp, pronounced nasalization of the face, tendency to strong eyebrow ridges, prominent chin, tendency to bulk of body and height of stature."

To illustrate the method of utilizing a physical type of known endocrinopathic origin as a point of departure for comparison with physical characteristics of any individual, the following series, one starting from a known acromegalic and terminating in a eunuchoid type, and another from a case of exophthalmic goitre are offered.

Two other cases (Figs. 10 and 11) are shown presenting extremes of hair and pigment arrangement.

Such a difference as that between the heavily haired case and the hairless type is certainly as impressive as that between a one plus and a four plus Wassermann reaction, or between a hæmolytic and non-hæmolytic streptococcus, and equally obscure.

Furthermore, it is possible to recognize far less obvious differences in hair or fat distribution, bony modeling of face and hands. It is customary, for example, to pass briefly over the thigh, suprapubic and abdominal hair arrangement in males with the report of "masculine type" in all cases where there is any upward growth above the transverse line found in females. As a matter of fact, there are many, yes, infinite varieties, passing imperceptibly from the almost hairless feminine arrangement to the gorilla-like completely hirsute condition. Similar and equally varied differences may be found in subcutaneous fat distribution, pigmentation and facial proportions. In a similar way, within the physiological panel, very slight differences in constipation tendency or blood sugar levels are being noted more frequently than in the past. And in women the lesser variations in menstrual function begin to take on a significance as great as that previously attached to complete cessation or metrorrhagia.

Hippocrates¹² knew that women who took on fat too easily and had menstrual disturb-

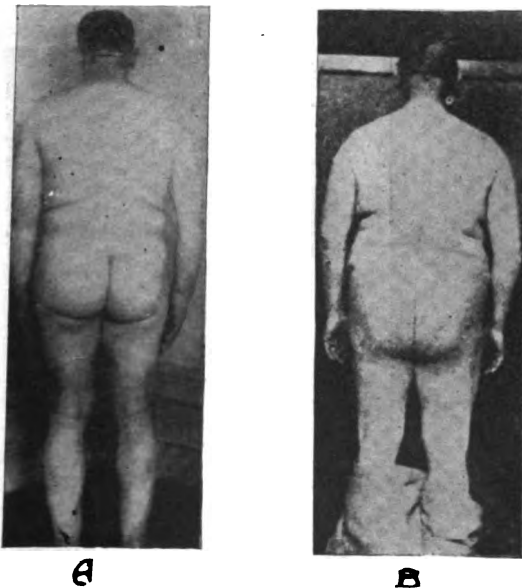


FIG. 2.

A.—Acromegalic, posterior view.

B.—Taken from J. E. Goldthwaite. Exemplifying the "herbivorous" type. The acromegalic began his hypopituitary phase later in life, after a preliminary hyperpituitary phase; but the disposition of fat is following the same lines as that of the case of primary hypopituitarism.

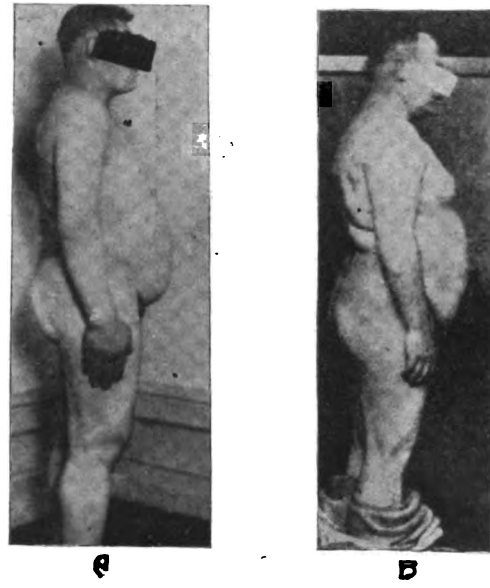


FIG. 3.

A.—Side view of the acromegalic.

B.—Side view of the herbivorous type. Note the small pointed hands.

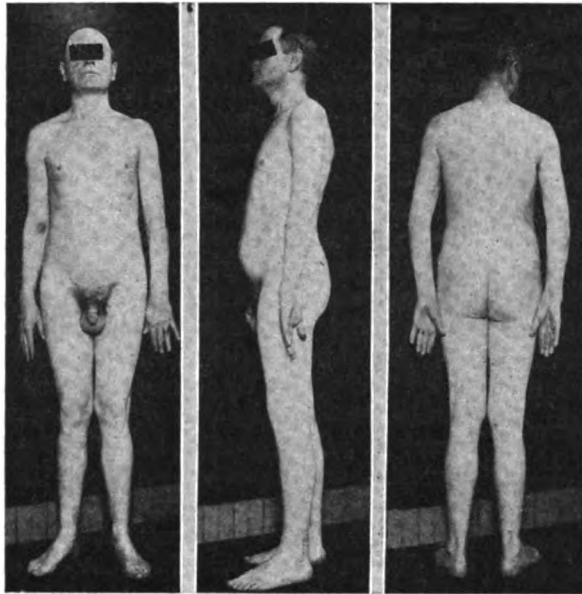


FIG. 4.

Intermediary type between the acromegalic and eunuchoid. Incidentally this patient had cerebro-spinal syphilis.



FIG. 5.

Eunuchoid type.



FIG. 6.



FIG. 7.

Showing an individual with suggestive largeness of the maxillary region, great breadth of glabella and widely spaced incisor teeth. Hands are not large. This is not a case of acromegaly but is comparable to the acromegalic type. Patient has vague indefinite pains in the bones and muscles.

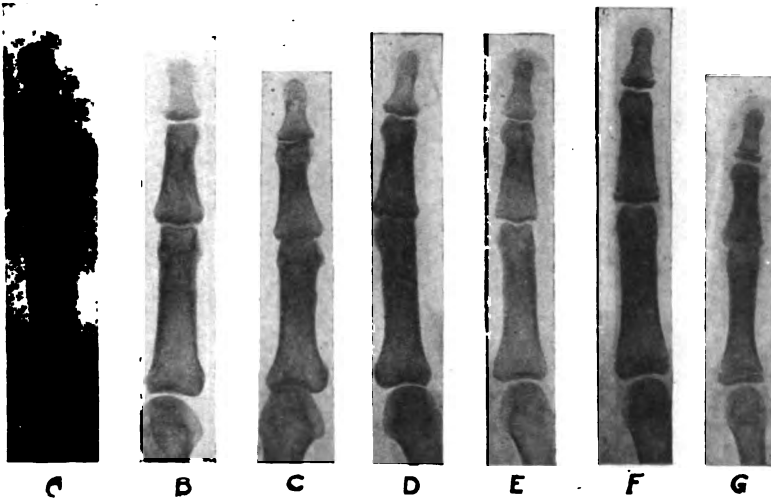


FIG. 8.

A.—Middle finger of acromegalic showing extreme terminal tufting and thickening of the shanks of the phalanges.

B.—Middle finger of a very large, big-boned man with heavy jaw but still not one to be characterized as a case of acromegaly. Note the large terminal tuftings; they are the same in kind but less in degree than those of the acromegalic.

C.—Middle finger of a thick set but rather short individual with unusually wide subcostal angle, very large nose and frontal sinuses, and having a tendency to chronic bronchitis and bronchiectasis but who would pass on the street as an absolutely normal man. Note the increase in the terminal tufts with a tendency to roughening and also thickening of the shanks.

D.—Middle finger of individual with large hands, widely separated teeth. Tendency to characteristics of dispituitarism. Has central nervous system syphilis. He has the distinct contour of femininity, and definitely feministic psyche. Note the longer and more pointed oval outline of the terminal tufts and also the tendency to a little more delicate modeling of the shanks of the phalanges.

E.—This patient has testicular atrophy. A vigorous individual who throughout his life has always presented the feministic contour, but still possesses a very combative masculine spirit. This individual distinctly borders on the Froelich type. Note the extremely small tufts and the delicacy of the shanks.

F.—The middle finger of the eunuchoid type shown in Fig. 9. This individual is 23 years of age. Note the small terminal tufts and the ununited epiphyses.

G.—The middle finger of a ten-year-old girl with hypopituitarism. Weight 230 lbs.

ances were often sterile. Now we know that this type has an infantile uterus, a high sugar tolerance and small terminal phalangeal tufts, and in these points bears great resemblance to the endocrinopathy known as adiposo-genital dystrophy.

Variations and differences within the immunological panel are common knowledge. Yet scant attention is paid to the slight degree of greater or less susceptibility of two or more individuals to an equal dose of the same infecting agent given under conditions in which external influences, such as exposure, fatigue, etc., are operating equally on all the subjects. Such conditions were well established in our training camps. Careful study of the anatomical panels of individuals during such epidemics as that of C. S. meningitis revealed physical characteristics so frequently repeated that they seemed to be part of the disease. These individuals would have passed roughly in the various other classifications as hyper-onto-morphs, lanky carnivorous or status lymphaticus. By comparing them with the endocrinopathies a somewhat more far-reaching conception develops. Their beak or rodent-like maxillary prognathism, high-bridged noses, narrow jaw arches, with crowded, irregular teeth, lanky frames and nails without lunulae, and with few exceptions reverse sex hair distribution (usually brunette), suggest dominant

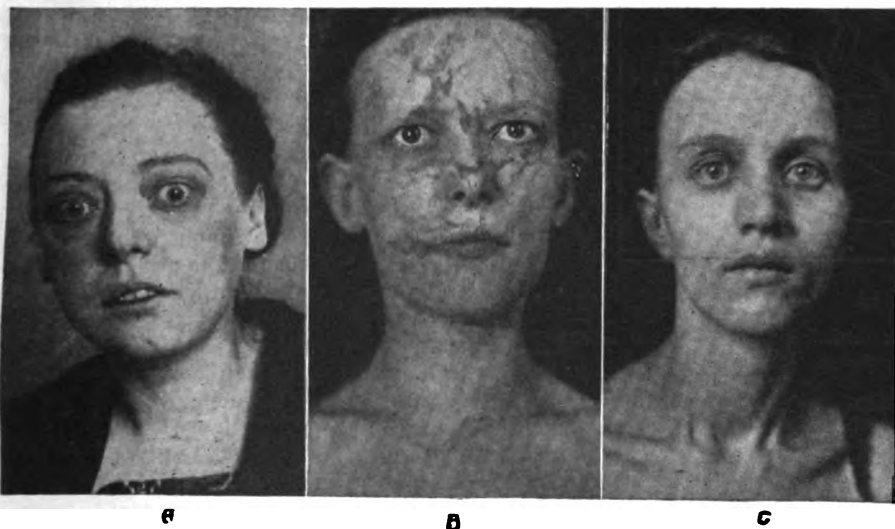


FIG. 9.

Graves diseases or thyroid series. A.—Very toxic with high basal metabolism. B.—Also case of hyperthyroidism, not quite so toxic as A but also with a high basal metabolism. C.—Case of pulmonary tuberculosis. Note in all three cases very high hair line with the recession over the temples, and scanty eyebrow, wide eye-slits and emaciation. Eager, apprehensive expression.

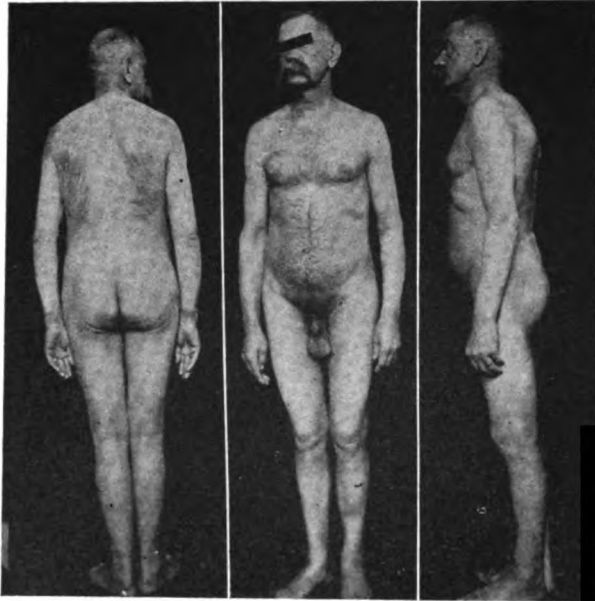


FIG. 10.

Are given as illustrations of extreme difference of hirsute arrangement. Note the pigmentation over the abdomen and dorso-lumbar region in Fig. 11. Patient in Fig. 10 has pernicious anemia. Patient in Fig 11, a young man of 21, has a blood pressure of 250.



FIG. 11.

activities of the pituitary-gonad-adrenal mechanism. Likewise in the "flu" epidemic the very great frequency of heavy-set, dark-skinned, hairy individuals has been a common experience to all who have worked with the

disease. In women, especially, a high percentage were found to have a tendency to plumpness, small, square hands without nail lunuli, marked pigmentation expressed as freckling or pigment patches in unexposed areas of the body, or many small, deeply pigmented moles. With equal frequency was found vicarious hair distribution, facial, rings about the nipples and midline growths between umbilicus and symphysis. These markings suggested by comparison with known endocrinopathies a dominant pituitary-adrenal mechanism. In this connection attention must be called to an associated phenomenon appearing within the physiological panel. The onset of the attack of "flu" very often occurs at the time of menstruation, or is credited with "bringing on" the period. The almost specific effect of the "flu" virus on pregnant women is likewise highly suggestive of disturbance in the endocrine balance affecting the reproductive mechanism.

While it is clear that these observations by no means prove the point, nevertheless they are so insistent that further study of the four panels and their interrelationship cannot well be ignored. If it will subsequently be demonstrated that endocrine balance is the force which determines personality, as expressed in the four panels of anatomy, physiology, psychology and immunity, then we may hope for preventive and curative measures along the path of glandular therapeutics.

Whatever may be the mechanism through which external influences modify type, it is

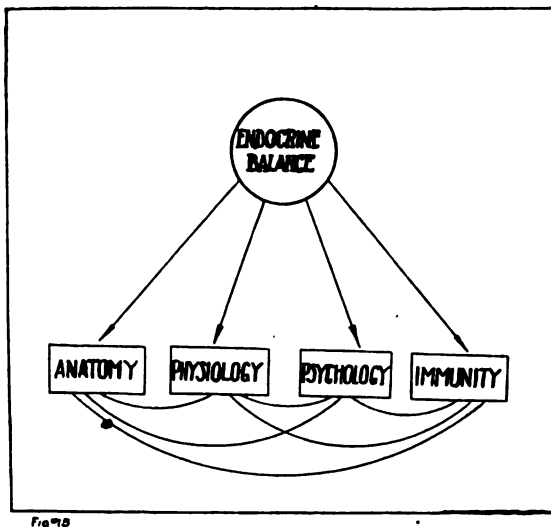


FIG. 12.

Schema showing the relationship of the panels of personality to one another and to the endocrine balance. It is very common to find one or another of the endocrine forces running dominant through all four panels; or it is frequently the case that one endocrine force is expressed in one or more panels and another endocrine force in the other remaining panels.

clear that they do. Diet, undoubtedly, operating in the physiological panel through the centuries has worked visible changes in the anatomical panel. Is it possible that in an analogous way the presence of a slow-moving infecting agent, as, for example, syphilis or tuberculosis, also operating through the centuries within the immunological panel, may have wrought changes in the other panels? On such an hypothesis, and recognizing that endocrine activities do determine the form and function of man, it is not difficult to outline problems for investigation. The great difficulty now, as always, is to develop a technique, a method, which will yield uniform and dependable results. There can be no longer any question that the glands of internal secretion have a great deal to do with form and function. But even without this assumption there is still much to be learned from the staring facts of anatomical characteristics, if they be correlated with the individual's physiological, psychological and immunological attributes.

We can go far toward a knowledge of the characteristics and potentialities of all the panels through a careful study of that one which, though most obvious, is yet perhaps the least minutely scrutinized. The relationship of the external appearance of the body to the endocrine glands lends a new impetus to this kind of study, and it is with a view to encouraging work along this path that the method of endocrinopathic standards and panel comparisons is offered.

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DISTURBANCES OF THE ENDOCRINE FUNCTION OF THE GONADS.*†

By W. C. QUINBY, M.D.,

BOSTON, MASS.

THE testis and ovary are organs in which are formed spermatozoa and ova. These, being cellular elements, are easily demonstrated by histological methods and are well understood. They constitute the so-called "productive secretion" of these glands and are thus analogous to the external secretion of other secretory organs.

The internal secretion of the gonads, being biochemical in nature, is not a formed element of the body. Neither is it yet demonstrable by chemical methods. That such internal secretion exists, however, there is abundant proof. The general name for all such secretory substances, proposed by Starling, is "hormone" or activator, a word which is now in general use.

In the male the endocrine portion of the testicle consists of the interstitial tissue, containing the so-called interstitial cells of Leydig. These cells lie between the generative tubules and appear somewhat like the cortical cells of the adrenal.

In the female the endocrine function is subserved also by the interstitial cells and by the corpora lutea as well. Evidence, experimental and otherwise, too voluminous to discuss here, proves conclusively that it is this internal secretion of the gonad which causes the appearance of those signs in each sex which are characteristic of puberty. Before puberty the body is infantile or undifferentiated in type, but with its appearance secondary sexual characteristics peculiar to either the male or female develop. In girls the breasts enlarge, fat is deposited over the thighs, the pelvis expands, and menstruation appears, together with the growth of hair in the axillæ and above the pubes. In boys the voice changes, due to growth of the larynx, and the beard appears. In each sex also there is an increase in the rate of growth of the body in general and of the genitalia.

Although it is not possible to attempt to evaluate all the evidence by which the importance of the interstitial portions of the gonads is proven, certain observations by Steinach must be mentioned, for they show even more clearly than does earlier work the great significance of this internal secretory tissue. He has even given to the interstitial tissue the name of "puberty gland," and by many experimental operations on rats and guinea-pigs, carried out before puberty, has shown that the secondary characteristics of sex may be produced practically at will. By transplantation of ovary

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† From the Urological Clinic of the Peter Bent Bingham Hospital.

into young castrated males, for instance, the normal male genitalia show regressive changes instead of growing, while the skeleton takes on a size characteristic of the female. Furthermore, the breasts and teats develop and the psyche also changes; so that such "feminized" males can and will suckle young. Conversely, if testis be transplanted into a castrated female before puberty, that animal grows to a size equaling or even exceeding that of the normal male, while its psyche seems also to partake of the male attributes. Further, attempts have been made to transplant both ovary and testis into a previously castrated animal with the result that phenomena occur suggesting an hermaphrodite.

From results such as these it is clear that the internal secretion of either testicle or ovary possesses a marked specificity and also that the secretions are mutually antagonistic in their action.

Such properties would seem of necessity to be laid down in the very earliest stages of differentiation of the sex glands of the embryo, although their main effect remains latent until the time of puberty. We know nothing as yet of the nature of the stimulus which calls into action this remarkable property of the interstitial tissue of the gonad. It is to be noted, however, that the interrelation between all the ductless glands is very intimate. For instance, the inhibiting action of certain diseases of the hypophysis on the development of the testis, both in its generative and interstitial portions, is well known. It is a fair assumption, therefore, that there may exist gonadal stimulating properties in some of the other endocrine organs.

Such being the significance of the endocrine function of the gonads in their physiological aspect, we should find clinical cases in man showing the results of either hyper- or hypofunction of these organs. Such cases will fall naturally into the following grouping:

A. Hypergenitalism.

1. Precocious puberty, in both male and female.
2. Hypergenitalism in cases showing a polyglandular syndrome (hypophysis; adrenal).

B. Hypogenitalism.

- | | | |
|----------------|---|---|
| In the Male. | { | <ol style="list-style-type: none"> 1. True eunuchs. 2. Eunuchoid conditions. 3. Late eunuchoid conditions after secondary sex characters are formed. |
| In the Female. | { | <ol style="list-style-type: none"> 4. Castration after puberty ("artificial menopause"). 5. The menopause. |

Space will not permit the detailed description of clinical cases illustrative of each of these above types, nor is this necessary, for examples of each are readily found in the literature. The following two contrasting cases occurring in the female will sufficiently illustrate some of the clinical conditions seen.

Case 1. *Precocious puberty associated with a tumor of the ovary. (Hypergenitalism.)*

A colored girl, seven years of age, entered the Harriet Lane Home of the Johns Hopkins Hospital on the 28th of April, 1916, complaining of pain in the lower abdomen, vomiting, and bleeding from the vagina.

Family history was normal.

Previous History: Health normal in all respects except for whooping-cough at six and chickenpox at five. Patient was born at term, after a normal labor, and weighed nine pounds. She was somewhat slower in learning to talk and to walk than other children, and has seemed to make rather poor progress during the past year when at school.

Present Illness: Three years ago, possibly after a fall, the mother noticed bleeding from the vagina similar to normal menstrual flow. This was unaccompanied by pain, but persisted rather profusely for over a week. During this time the child was listless. At this time the mother also noticed that the child's breasts were enlarging and that she had pubic hair. There was no mental change, however. The child seemed normal for the next year and a half, when bleeding again occurred, lasting ten days. This time it was accompanied by some pain, and the child was quite irritable. Six months later there occurred the third period of bleeding, and this was preceded by considerable pain in the abdomen, which was later followed by nausea and vomiting. At this time the mother noticed something wrong in the abdomen. The flow lasted five days and was less in amount than it had previously been. A month later another period occurred, also accompanied by vomiting. The breasts had steadily become larger and the growth of hair had been marked during the last year. During the last four months mental dullness has increased.

Physical Examination: General appearance is that of a child of about twelve to thirteen years, well nourished, quiet, and intelligent. There is abundant hair in the axillæ and over the pubes. The head is normal; the thyroid gland seems to be slightly enlarged. The breasts are markedly developed, 7.5 cm. in diameter. The nipples are erectile. In the

abdomen there can be felt a well-defined tumor mass which entirely fills its lower part, extending to 2 cm. above the umbilicus. This mass is not tender, has a smooth surface, and is very freely movable. It seems to be attached in the region of the pelvis, more toward the right side than toward the left. The genitalia have all reached the stage of development seen in the adult. Renal function and examination of urine normal. Wassermann reaction negative. Sugar tolerance normal. General bodily measurements correspond to those of a girl of from eleven to twelve years of age. X-ray examination shows normal sella.

At operation, performed by the Gynecological Service, the tumor was found to arise from and to replace the right ovary. The left ovary appeared normal in size and no corpora lutea were seen. The tumor was removed.

I unfortunately have no further notes on the progress of this case. If we may assume that the presence of the tumor served as the stimulus for the interstitial tissue of the ovary (the "puberty gland" of Steinach), it is possible that some of the manifestations of puberty might disappear following the operation. Indeed, instances of such happening in each sex are to be found in the literature.

Case 2. Delayed puberty; associated with possible hypophyseal dysfunction. (Hypogonitalism.)

A girl sixteen and a half years old entered the Peter Bent Brigham Hospital on the service of Dr. Harvey Cushing, the 30th of December, 1913. Her complaint was that she had never menstruated, although she was nearly seventeen years old, and that she was backward in development. She had had occasional attacks of fainting spells, with some dizziness or "cloudiness" of the head. Polydipsia and polyuria were quite marked.

Family History: Father has locomotor ataxia and also is insane. His height is 5 feet 8 inches, weight 160 pounds. Mother is nervous in temperament; height, 5 feet 5 inches; weight, 160 pounds. Patient is an only child. There is no other history of nervous disease or of insanity.

Previous History: Patient has never been a strong child, having had all exanthemata except scarlet fever. Her habits are excellent, but she has only gone through the sixth grade in the public school.

Present Illness: When about eight years old it became apparent that the patient was smaller than normal for her age. As years passed this discrepancy grew more noticeable,

and she has only grown about five inches in the last seven years. At present she is 4 feet 1½ inches in height. She does not seem to be very immature mentally. Catamenia have not appeared. Secondary sexual characteristics are apparently well developed, however. During the attacks of fainting the child has lost consciousness once or twice, but there was no convulsion. The attack lasts usually about a few seconds. Accompanying the fainting there is a "cloudiness" in head. This does not seem to be an outspoken headache, but merely a sense of pressure. There is no disturbance in gait, nor in hearing.

Physical Examination: Height, 4 feet 1½ inches; weight, 99 pounds. Head large in proportion to rest of body; circumference 56 cm. Teeth in poor condition. Hair luxuriant on head, with fair growth both in axillæ and over pubes. Skeleton: bones are markedly under-developed for the age of patient. The body is symmetrical. There are no epiphyseal enlargements. Breasts under-developed for age. Hands small, with thin, tapering fingers. Feet broad and flat. Examination of the cranial nerves fails to find abnormality in any of them. Mental examination is apparently normal. All reflexes, both superficial and deep, seem to be normal, except the patella reflex, which is hyperactive. The blood pressure was normal and the Wassermann reaction was negative. Examination of the eye grounds showed normal fundi. X-ray examination of the sella turcica showed it to be of rather square shape, about 10 mm. in diameter. There was no evidence of abnormality in the region of the skull. Urine analysis was normal in all respects. Patient was discharged untreated, inasmuch as no surgical lesion in the hypophysis or elsewhere could be determined.

Here we have a case in which the hypogonitalism occupies the forefront of the clinical picture, but in which there were added to this two symptoms: polydipsia and fainting spells suggestive of hypophyseal disease. Careful investigation, however, failed entirely to demonstrate any local signs of such disturbance. It is certain from the X-ray plate and examination of the eye-grounds that there was no tumor or cyst present.

Such cases as these illustrate clearly the very definite influence which the sex gland has on the secondary sexual characteristics. Important work is being done both on the experimental and clinical side of such problems as these, and it is not too much to expect that in the future we may be able to control various manifestations of dysfunction on the part of the endocrine system with much more accuracy than is possible at present.

RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF THYROID DISEASE BASED ON THE USE OF THE EPINEPHRIN HYPERSENSITIVENESS TEST.*

A. THE DIFFERENTIATION OF TUBERCULOSIS AND HYPERTHYROIDISM DUE TO "DIFFUSE ADENOMATOSIS."

By **EMIL GOETSCH, M.D.**,
BROOKLYN, N. Y.

IT is my purpose in this preliminary review to report some rather encouraging surgical successes in a difficult group of patients, presenting an obscure clinical syndrome which presents both diagnostic and therapeutic difficulties. I refer to that large group of borderline cases in whom the familiar syndrome of fatigue, asthenia, loss of strength and weight, nervousness of varying degrees, tachycardia, vasomotor instability and possibly slight elevation of temperature would make one suspicious of tuberculosis, but in whom the physical signs, laboratory and X-ray findings are insufficient for a positive diagnosis.

As a result of recent studies on a group of these patients, who were supposed to be suffering from tuberculosis, but in whom the presence of this disease could either not be demonstrated at all upon expert examination or was found to exist to such a minor extent as not to be held responsible for the symptoms manifested, it is my feeling that the underlying trouble was hyperthyroidism and not tuberculosis. The reasons for believing this are that, in the first place, these patients had failed to improve under medical treatment and under rigid rest cures, carried out for varying lengths of time from five or six months to five years, off and on; secondly, on expert examination little or no tuberculosis was found; thirdly, these patients showed a constitutional hypersensitiveness to adrenalin; and fourthly, subsequent to thyroid resection, which I advised and carried out, there was definite improvement in all but one case and in some the improvement was almost a cure; and, lastly, upon histological examination of the gland tissue removed, a condition was found in the majority of the cases which might be called "diffuse adenomatosis," in which there is an increase in the interstitial tissue and in the new-formed acini derived apparently from the so-called "foetal cells" of the thyroid gland. Furthermore, there is demonstrated by the increase of mitochondrial content an increased activity of this tissue.

There are twelve cases in this series in whom the diagnosis of tuberculosis, either probable

or suspicious, was made and who have in practically every instance undergone a rigid anti-tuberculosis therapy extending in some instances over years. The majority of these patients were referred to me from the Trudeau Sanatorium or from Saranac Lake by Doctors Heise, Price and Kingshorn. One recent case was referred from Loomis Sanatorium by Dr. L. F. Krumrein. It is not surprising, perhaps, that these patients should have been regarded as suffering from incipient tuberculosis by physicians in various parts of the country, particularly when one takes into consideration the clinical symptoms mentioned above. Fortunately this group of patients had the advantage of a final expert pulmonary examination, which in most instances revealed very little or no tuberculosis at all. Tuberculosis was, therefore, not regarded as responsible for the clinical manifestations in these patients. This opinion was arrived at in the majority of these instances after a comparatively brief period at the sanatorium. On the other hand, some of these patients had undergone the ordinary medical and hygienic treatment in one case as much as five years. In fact, this patient, a nurse, had "cured" at two different sanatoriums before spending a final period of rest at Saranac Lake, where the true pathology of her disease was recognized. In each instance in view, first of all of the negative results obtained by hygienic and medical measures over considerable periods of time; the general incapacity of the patient; the relatively minor findings as regards pulmonary tuberculosis, and, finally, the point I wish to emphasize particularly in this report, namely, the positive reaction to my epinephrin test revealed the fact that beyond a reasonable doubt these patients had been for some time and were at present suffering from a mild to moderate hyperthyroidism.

In the NEW YORK STATE JOURNAL OF MEDICINE for July, 1918,¹ I described my epinephrin test and reported my experiences with it over a period of three years' observation of conditions of hyperthyroidism, which diagnosis was later confirmed by operation and microscopic study of the gland tissue removed. The results of these studies in the first place convinced me that in clinical states of hyperthyroidism there is a constitutional hypersensitiveness to a subcutaneous dose of 0.5 cc. of the 1 to 1,000 solution of epinephrin chloride. I have continued my studies on this subject since that time with the same positive results. In the *American Review of Tuberculosis* for April, 1919,² Nicholson and I reported our results in a study of a small series of cases entering the Trudeau Sanatorium with reference to the presence or absence of hyperthyroidism in cases of positive and possible tuberculosis. We discovered a num-

* Read at the Annual Meeting of the Medical Society of the State of New York at New York City, March 25, 1920.

ber of patients who symptomatically might be considered as having either incipient tuberculosis or mild to moderate hyperthyroidism or both. The problem was one, then, of determining whether these symptoms were due to tuberculosis or hyperthyroidism or both. We found that hyperthyroidism, whether or not associated with tuberculosis, will give a positive reaction to adrenalin. Tuberculosis uncomplicated by hyperthyroidism did not react positively to epinephrin. As a result we felt that the test was of great diagnostic aid in picking out the patients suffering with hyperthyroidism from those borderline cases presenting symptoms more or less characteristic both of tuberculosis and hyperthyroidism. As a consequence we were encouraged to advise operative measures in a number of these cases, and I am happy to say that striking beneficial results were obtained. The diagnosis was thus greatly aided, operation was more safely advised and the results justified our beliefs.

Since the publication of this paper, with these facts and suggestions, I have had further experiences with this type of case. I have also had time to thoroughly study the gland tissue removed and to observe the post-operative results after the lapse of nine months to a year. The patients belonging in this series were all suspected of having tuberculosis, but in only two or three of them was tuberculosis positively found, and in these it was inactive. The latter was considered to be of minor significance in explaining the clinical symptoms. Subsequently the diagnosis of hyperthyroidism was suspected and a positive epinephrin response was elicited, whereupon these patients were advised to have a partial thyroidectomy done, which I later performed. A few of the cases had a very clearly recognizable clinical syndrome of hyperthyroidism, together with further signs either in the eyes or in the gland, which made the diagnosis positive to one familiar with the disease. In these cases the disease should possibly have been recognized even without a positive epinephrin test. These patients had, however, been long under observation and treatment of various physicians, and the exact nature of their disease was not recognized. Eventually tuberculosis was thought responsible and these patients were sent for opinion and treatment to Saranac Lake. I may draw attention to these cases here, for even frank hyperthyroidism is often mistaken for possible tuberculosis, and I might point out further that the symptomatology, as exemplified in these cases, is often not at all unlike tuberculosis. These comparatively few cases can be recognized after the ordinary methods of examination and after a careful history. Among these there was one case of

exophthalmic goitre in whom there was only slight exophthalmos, the other eye signs, however, being positive. There was a slight enlargement of the gland with increased vascularity. These signs, together with the clinical history, should have been sufficient to warrant a diagnosis. In two cases definite adenomata were found. They were distinctly visible and easily palpable. I am particularly desirous, however, of directing attention to the majority of the cases in this series in whom a positive diagnosis of hyperthyroidism could not be made after the ordinary methods of examination. These cases were obscure because of the absence of signs of hyperthyroidism, such as the positive eye signs and the increased vascularity with thrills and bruits, as in exophthalmic goitre or the presence of nodules in the gland, as in adenoma.

These cases had undergone rest cures and general medical and hygienic treatment for periods varying up to five years without any decided benefit. The symptomatology was reasonably uniform and without entering into the details in each case I may say that the symptoms and signs were those of weakness, loss of weight, fatiguability, slightly increased temperature up to 99.5° or even 100° on occasions, mild tachycardia from 90 to 110, and general nervous manifestations. In all cases there was a positive reaction to the epinephrin, usually of moderate degree. This symptomatology, together with the failure of improvement under rest and hygienic measures, the absence of definite tuberculosis and a positive epinephrin reaction, was sufficient to my mind and to the minds of the tuberculosis experts who saw these cases to warrant the diagnosis of hyperthyroidism. A bilateral resection of the gland, which was in the majority of the cases enlarged, was done.

There are some peculiarities about these glands which have led me to think that we are dealing with a special group of cases of clinical hyperthyroidism based upon a peculiar pathological change in the thyroid gland. This change is neither of the nature of the gland found in Graves' disease or exophthalmic goitre, nor is it of the type in which true, discrete nodules, the so-called "foetal-adenomata," are found. The glandular pathology in these two types of thyroid disorder is readily recognized and is well known to be capable of producing hyperthyroidism. However, in this obscure group of which I am speaking, the following characteristics are fairly uniform. In the gross the thyroid gland is moderately enlarged. It is usually readily palpable and may be visibly enlarged. It has a fairly firm, slightly irregular glandular or lobulated feel. No definite nodules are palpable, and signs of in-

creased vascularity are not demonstrable, such as thrills or bruits, in the gland or at the poles. At operation one frequently finds that the gland is loosely, sometimes quite firmly, adherent by its thickened capsule to the prethyroid muscles and to the large vessels and sternomastoid laterally, and one is reminded of a possible mild periglandular inflammatory reaction. This periglandular fibrosis sometimes makes it difficult to deliver readily the thyroid lobe. There is increased vascularity, particularly of a venous character, in the capsule of the gland. The thyroid arteries are only slightly if at all enlarged. The gland contains a moderate amount of colloid. It is of spongy consistence, friable, and has a marked tendency to ooze from the cut surface. There is not the familiar increased consistency of the gland as seen in exophthalmic goitre, nor is there the glistening character seen in colloid glands. Occasionally an increase in the fibrous tissue of the gland is noticeable. One is reminded of a condition possibly midway between that seen in exophthalmic goitre and that recognized in colloid goitre.

With the microscope fairly uniform characters are again found. The acini are not large and the gland contains a moderate amount of colloid. The striking feature is the marked irregularity in size of the acini with a tendency to the grouping of the smaller acini into nests, as it were, these acini in cross-section being no more than a globule of colloid surrounded by ten or fifteen cells. Besides these areas of small acini there is also an increased number of interstitial cells, the so-called "foetal cells" of the thyroid, and again it is common to find areas of lymphoid cell accumulations, such as is so often seen in the hyperthyroid gland. The alveolar walls of the larger acini are somewhat wavy. The cells are slightly taller than in the normal gland, being cuboidal to possibly low columnar, and the intra-acinar colloid in these cases has a scalloped border where this is in contact with the proximal margin of the parenchymal cells. It has, furthermore, a greater tendency to take on basic stain, appearing purplish after hæmatoxylin. These characteristics of the colloid seem to be a minor detail, but they are so constant as compared with other forms of thyroid pathology that they may have some significance. Discrete and encapsulated adenomata are often found. Occasionally on close examination of the gland very small granules, no larger than wheat grains, quite separate and discrete, are seen. These are small, very young adenomata and frequently give a hint as to the diagnosis. Because of the increased amount of interstitial tissue, which we believe corresponds with the so-called "foetal cells" of Wölfler; because of the large

number of small, apparently new-formed acini, and because this so-called "foetal tissue," together with aggregations of lymphoid cells is scattered diffusely throughout the gland and is not aggregated into discrete nodules to form true adenomata, I have, for want of a better term, called this condition "diffuse adenomatosis." This may not be a very happy term, but it has the value of being descriptive possibly. I wish to state further that the appearance of these glands is, of course, decidedly different from that seen in true exophthalmic goitre and true adenoma, and also differs from the appearance of the puberty hypertrophy gland, which it resembles more closely, however, than the two conditions just mentioned.

I may speak now of further studies which indicate that this type of gland is abnormally active. I refer to the histological demonstration of cellular activity. I believe that I am correct in my assumption from histological studies that adenoma tissue is active. In a paper published in May, 1916, in the *Johns Hopkins Bulletin*, entitled "Functional Significance of Mitochondria in Toxic Thyroid Adenomata,"³ I published the results of some studies on the histological evidence of cellular activity in adenoma of the thyroid. This evidence consisted in the demonstration of intracellular structures called mitochondria, which have a great affinity for acid-fuchsin and are readily recognized in the cytoplasm of the cell as brilliantly red-stained granules, rods and spiral filaments. The normal thyroid cell outside of the adenoma was found to contain very few of these bodies. On the basis of these studies I felt safe in believing and in stating that foetal adenomata of the thyroid were of themselves actively secreting structures and of themselves responsible for clinical hyperthyroidism occurring in these cases. Further studies since then along these same lines have shown that in all cases of exophthalmic goitre these structures are present in great abundance, while in colloid goitres they are very few in number. In brief, I feel now that, regardless of the grosser histological structure of thyroid tissue, if one can demonstrate these mitochondria in excessive numbers in the thyroid cell, one can be sure that that cell is an active one. With this new cytological criterion of cellular activity we have a much more reliable means for the histological detection of activity of thyroid tissue than we have had heretofore. With this method it has been possible to show that the so-called "foetal cells" of the thyroid, whether occurring in diffusely scattered groups in the interstitial spaces or in aggregated nodules to form adenomata, are active, losing their activity only by the process of cellular degeneration, autolysis and destruction of the cells, and

finally cyst formation in the case of the larger adenomata. Thus we see that clinical hyperthyroidism can be produced purely on the basis of hyperplasia of the interstitial tissue springing from the foetal cells of the thyroid and is not necessarily due to primary activity of the parenchymal cells. This would be the case in nodular adenoma or in cases of so-called "diffuse adenomatosis" where the foetal or young cellular tissue is sprinkled diffusely throughout the gland. On the other hand, I have been able to show that hyperthyroidism may be dependent upon a primary mild overactivity of the parenchymal cells with less evidence of foetal cell overgrowth, as in puberty hypertrophy. Now, in this group of so-called "diffuse adenomatosis" cases which I am reporting, in which there is a latent hyperthyroidism hardly possible of diagnosis by ordinary means and in many ways simulating tuberculosis, there is a hyperplasia of the interstitial foetal tissue with increased activity, and also an apparent mild overaction of the acinar cells of the thyroid. This overactivity is recognizable by the increase of mitochondria in the cells, particularly in the interstitial or foetal cell groups. These cells take on a rather striking reddish color, as compared with the remaining thyroid tissue. In other words, I believe that the hyperthyroidism in these cases is more dependent upon hyperplasia and hyperactivity of foetal cell nests, and small, new-formed acini derived from these, than upon primary overaction of the true alveolar or parenchymal thyroid cells, as in puberty hypertrophy and exophthalmic goitre.

The operation in these borderline cases or in the milder cases of true, clear-cut hyperthyroidism depends entirely upon the type of pathological change which is found in the thyroid gland. I think there is no doubt that in general the fear of a myxoedema or hypothyroidism resultant upon the removal of a portion of the thyroid gland has been somewhat over-emphasized and has resulted at times in a too limited removal of the active thyroid tissue, too limited, in fact, to produce the desirable relief after operation. There is thus among those doing a good deal of thyroid work a general feeling that when possible and safe more thyroid tissue should be removed than it has been customary to do. In fact, it is surprising how much of the thyroid, even up to three-fourths or four-fifths of the entire gland substance can be removed without producing symptoms of hypothyroidism. In these cases of so-called "diffuse adenomatosis" it has been my custom to do a generous resection of both thyroid lobes, together with the removal of the isthmus. This has in most cases been followed by prompt improvement, if not com-

plete relief. There has been usually and almost immediately progressive gain in weight and strength, with loss of the nervous manifestations, and the increased temperature. A margin of gland tissue with posterior capsule is left on either side to protect the parathyroids and the recurrent nerve, and a nodule of gland is left above at each upper pole. Preliminary ligations of the thyroid arteries are, of course, not indicated, inasmuch as the gland is not particularly vascular and the symptoms are not excessive. In a single exophthalmic goitre case in this series a generous bilateral resection was done with a very prompt and striking improvement. In the cases with nodular adenoma, if only one or two nodules are present, these are separately extirpated. If the nodules are numerous and scattered throughout one or both lobes a partial resection of one or both lobes is done. The puberty hypertrophy cases are treated in a manner similar to that outlined for the adenomatosis cases.

The importance of distinguishing between two such serious diseases as hyperthyroidism and tuberculosis need hardly be mentioned. The difficulty of recognizing the early stage of either disease in the first place, and secondly of distinguishing between the two, is very great, as Nicholson and I pointed out in a paper published in April, 1919, in the *American Review of Tuberculosis*. There are doubtless many patients presenting themselves at sanatoria for tuberculosis with symptoms which appear not to be accounted for by the amount of tuberculosis, either active or inactive, which they have. We found that among the admissions to the Trudeau Sanatorium there occurred a fair number of patients suffering from hyperthyroidism and not from tuberculosis. In subsequent studies by Nicholson, which, however, were unfortunately not published, these findings were further confirmed. In the first place, it is very important to have a very carefully taken history and physical examination. This will often of itself point to the probable diagnosis. In my series of cases here reported I was greatly aided by the fact that these patients had had the benefit of a careful pulmonary examination, the results of which one would accept without question. Furthermore, the final test, which to my mind clinched the diagnosis, was that in all of these cases there was a positive epinephrin response. This test helps to place the diagnosis on an impersonal basis, for on the basis of clinical symptoms and examination alone the syndromes of the two diseases in their early stages are so similar, particularly with reference to asthenia, loss of weight, irritability, mild tachycardia, labile pulse, and often a slight afternoon rise of temperature, that a differential diagnosis is well-

nigh impossible, particularly if there is a very small amount of fibrotic change in the lung, perhaps at one apex, the nature of which it is impossible to determine.

An interesting differential point between the two diseases lies in this, that whereas tuberculosis responds rather promptly to a well regulated hygienic life and to thorough rest, these cases of mild hyperthyroidism are but little benefited, even after prolonged periods of inactivity. In one case the patient had undergone rest cures at three different sanatoria during the course of five years, with very slight improvement indeed. Another had rested for five months without any recognizable benefit; another for several weeks, having previously sought relief from physician after physician during the course of about a year. The peculiarity of the hyperthyroid cases, is that, while they feel better at rest, they do not make progress in such a way as to allow them to again resume activity without bringing out almost immediately again the symptoms of which they complain. In other words, if such a borderline case fails to respond to the rest régime after a thorough trial, and particularly when there is very little or no tuberculosis demonstrable, one should begin to think of hyperthyroidism as one of the possible causes of the patient's trouble. If, then, the history and physical examination seem to make this diagnosis probable, and particularly if these cases are hypersensitive to epinephrin, I feel justified in advising operation.

In brief, then, I should like to emphasize the importance, first of all, of recognizing hyperthyroidism among a large group of obscure cases symptomatically simulating one another and of which tuberculosis is one of the most important. I wish to emphasize further the diagnostic value of the epinephrin test in recognizing hyperthyroidism, in which case there is a constitutional hypersensitiveness to this drug. As far as the pathology of the gland is concerned in these clinical cases, which were regarded as tuberculosis by many physicians who saw them previous to their appearance at Saranac Lake, I wish to draw attention particularly to that condition to which I have given the name of "diffuse adenomatosis," because it is in this condition that the diagnosis is so difficult to make. I shall not refer particularly to the cases of early Graves' disease or of visible or palpable adenoma, for these conditions should probably have been recognized without ever suspecting that tuberculosis might be the cause of the trouble. However, the most expert clinical diagnostician, I believe, is often at a loss in recognizing cases of mild hyperthyroidism due to diffuse adenomatosis of the thyroid gland. In this latter condition there

are neither the well-known eye signs and vascular features of exophthalmic goitre, nor are there the discrete nodules of adenoma. The gland is usually mildly to moderately enlarged, fairly uniformly; it has an elastic, firm feel and at operation is seen to be more or less adherent to the surrounding structures. The capsule is thickened, there is some increased circulation, particularly, it seems, of venous nature, and the characteristic features are more particularly seen in the microscope. Here we find an increase of the interstitial so-called "foetal cells." There are numerous nests of very small new-formed acini. The remaining larger acini vary greatly in size. The alveolar walls are often wavy; the cells are cuboidal to low columnar and oftentimes aggregations of lymphoid cells are characteristically seen. I am almost of the opinion that we are dealing with a new clinical entity which heretofore has very often escaped notice, and in which hyperthyroidism is produced principally by an increase in amount of the so-called foetal tissue in the thyroid, with also some increased activity of the thyroid alveolar cells. This, in a number of cases, was recognized by the increased concentration of mitochondria in the cells. Furthermore, I wish to emphasize the close similarity of these cases with early tuberculosis; to emphasize the desirability of an early expert pulmonary examination which, if essentially negative and when a positive epinephrin response is elicited after a reasonable trial at rest cure, and in the absence of any other recognizable pathology, should lead the physician to think of a possible hyperthyroidism and thus of the benefit which in many of these cases follows resection of the gland. The results thus far obtained are sufficiently encouraging to warrant further trial of this kind. The majority of the patients were greatly benefited by the operation. In no case were the symptoms made worse. In a few instances the benefits were striking. There was a rapid increase of strength and weight, with a loss of nervous symptoms and a return of the pulse and temperature to normal, following which the patient was again able to resume his or her normal occupations, to escape the further dread and brand of tuberculosis, and to again lead a useful life.

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THE RESULTS OF SURGICAL TREATMENT OF EXOPHTHALMIC GOITER.*

By E. S. JUDD, M.D.,
ROCHESTER, MINN.

IT is important in estimating the value of the different forms of treatment of hyperthyroidism, first to have a definite understanding of the different types of toxic goiters.

The adolescent goiter, which is a physiologic enlargement of the thyroid gland, is often associated with many manifestations which simulate the symptoms of exophthalmic goiter, but this condition is very different from hyperthyroidism. The results obtained from treating young girls who have these symptoms must not be confused with those secured by treating cases of hyperthyroidism.

Thyrototoxic goiter, or Plummer's disease, is essentially unlike hyperthyroidism, in spite of the fact that it is sometimes quite difficult to distinguish one from the other. The immediate results from the surgical treatment of Plummer's disease are about the same as those obtained from the treatment of hyperthyroidism, but the ultimate results are better in the former.

Surgery is based definitely on anatomy and pathology, and errors are often committed in trying to establish operative procedures on any other foundation. A pathologic lesion in the thyroid, for example, is responsible for a disease condition which is evidenced by a certain syndrome. In all surgery in which the effort is made to eradicate such lesions the results are uniformly successful, while in the instances in which alteration or correction of the physiologic phenomena is attempted the results are not always good.

The etiology of hyperthyroidism is not as yet definitely established, although numerous theories have been advanced. It has been shown that in all cases of exophthalmic goiter there is a very constant and positive histologic change in the structure of the thyroid gland. While it is not contended that this is the only tissue changed, it has been shown in our clinic that no case of Graves' disease, or exophthalmic goiter, exists in which there is not this very certain and positive hyperplasia in the thyroid gland. Because of its similarity to toxemias the disease is best grouped with them, and the condition is certainly under the control of the cellular changes which occur in the thyroid. Concurrently with the symptoms of hyperthyroidism, hyperplasia of the thyroid is usually shown by a definite increase in size of the gland, whether or not it is grossly evident. When a part of the thyroid is removed, the symptoms subside. If symptoms return they are practically always associated with an enlargement of the portion of the gland which was not removed, so that no matter what our idea is of the

relationship of the central and sympathetic nervous systems and the other ductless glands in their association with the etiologic factors of hyperthyroidism, the fact is established that the occurrence of the symptoms go hand in hand with the changes in the thyroid gland. This seems to determine a positive pathologic basis for thyroidectomy in such cases.

The development of surgery in cases of hyperthyroidism has been almost entirely by American surgeons; only recently has surgery been employed in such cases elsewhere. The technic of thyroidectomy for hyperthyroidism is much more difficult than the same operation for the so-called simple goiter, because of the friable character of the gland due to the increase in the cellular structure and to the numerous small vessels. Otherwise the operation does not differ from the operations for other lesions in the thyroid. While in recent years the improvement in the results of operation have been due partly to refinements in technic, the greatest advance has come from a better understanding of the disease in all of its clinical aspects.

As pointed out by Plummer several years ago hyperthyroidism occurs in cycles or exacerbations. The onset is usually gradual, the symptoms increasing until a climax is reached, and then if the patient survives there is a gradual subsidence of symptoms to a normal or nearly normal condition. Usually, after a certain length of time, the symptoms recur and continue progressively to another climax, followed by the same course. Before an attempt is made to study the results of any of the different methods of treating hyperthyroidism it would be well thoroughly to consider the natural course of the disease, and bear in mind that all the symptoms may disappear spontaneously, and rarely hyperthyroidism may terminate after any one of the attacks and leave almost no trace of the disease. Plummer believes that the majority of patients run this regular course and that those who survive the acute attacks will eventually recover completely. He believes that any beneficial treatment reduces the natural mortality, shortens the course, and prevents the occurrence of permanent terminal degeneration.

In outlining the treatment for hyperthyroidism it must be remembered that the disease occurs in attacks. A careful consideration of the relative time of the attack gives a suggestion as to how the treatment should be carried out. The time of instituting surgical treatment is the most important factor in estimating the immediate and the ultimate results. Although the degree of hyperthyroidism may not seem excessive, if the symptoms are quite rapidly increasing in severity, that is, if the nervousness is progressing and strength and weight are decreasing, the patient is on the downward wave of an attack, and no radical surgery should be undertaken at this time. The high mortality of the early operations for

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hyperthyroidism was due largely to the fact that the operation was undertaken when the disease was progressing rapidly; it was believed that unless something was done to abate the condition, it would go on to a fatal termination. It is true that fatalities will occur in some cases regardless of the treatment employed, but all cases considered, more patients will be saved if the simple palliative measures are resorted to during the progress of the attack, instead of the radical operation. Many more patients will eventually recover if they are carried over the climax of the attack by rest, increasing elimination, hot water and quinin-urea injections into the thyroid gland, and ligation of one or more of the thyroid vessels. Ligation of these vessels helps more than any of the other palliative measures, but it must not be done in the most extreme cases, at least not until the simple procedures have been tried. All of these measures must be considered as palliative, and should be used only with the idea of precipitating the particular attack.

The result of these palliative measures is often striking, especially following ligation, and there is a tendency to consider the patient cured because he appears to be much improved. In the early surgery of the thyroid we believed that ligation of the vessels would cure a large number of patients, but more recently we have found that many have relapses, often more severe than the original attack. Plummer has records of several patients who improved markedly following ligation of the superior thyroid vessels; the patients returned to their homes and remained well for a time and then had relapses and attacks of severe hyperthyroidism. This seems to support the contention that no matter how well these patients may appear to be following palliative treatment, it is always best to advise a thyroidectomy as soon as recovery is sufficient to make it safe, since they will be much better after the gland is removed, and the danger of relapse will be very materially reduced.

Until recently, we depended entirely on the clinical picture and physical findings by which to estimate the degree of toxicity in the cases of hyperthyroidism, but in the past few years it has been shown that the toxicity may be measured accurately by the changes produced in the basal metabolic rate. The basal metabolic rate is always increased in cases of hyperthyroidism, and decreased in cases of hypothyroidism. While some unknown factors may enter into the problem of hyperthyroidism the changes in the metabolic rate are characteristic and give an accurate method for the determination and estimation of the degree of thyroid toxicity.

For practical purposes, in deciding the plan to follow in the treatment of a case of hyperthyroidism, a study of the clinical features is most important. Usually the metabolic rate is increased in the proportion indicated by the clinical symptoms, so that the degree of hyperthyroidism

estimated by clinical features and by the metabolic rate is the same. In certain cases, however, the two do not coincide; for instance, the pulse rate may be so high as to indicate a marked degree of hyperthyroidism and the metabolic rate may not be high, or the converse may be true. If these findings do not agree the palliative measures should be employed first, even at the risk of being too conservative. The basal metabolic rate, accurately determined, is a very definite estimate of the disturbance in the thyroid, and is of great assistance in estimating the degree of hyperthyroidism and hypothyroidism. In the future it will be very valuable in a study of the results of the treatment of these conditions.

In order to obtain a fair estimate of the value of the different methods of treatment for hyperthyroidism, the natural course of the disease should be kept in view, and cures should not be reported within a short time after the subsidence of symptoms. No specific medication has had any definite influence on hyperthyroidism, although a systematic course of rest, increase of elimination, and a regular diet may have such a marked influence on the progress of the toxemia that the patient will eventually almost recover. Beside this so-called rest treatment, a great deal has been claimed of late for the Roentgen ray and radium treatment. Our experience in these cases has been largely with the surgical treatment, but the rest treatment has been employed in many cases, sometimes over a long period of time, and in a number of instances radiotherapy has been added. So far the results of these conservative methods have been helpful and encouraging up to a certain point, but my experience is that the subsidence of the symptoms is more complete and the recurrences are fewer following surgical methods. The importance of removing the gland in the fairly early stages is becoming manifest since it prevents the gradual development of some of the terminal conditions which frequently occur in these cases and which prevent complete cure. By means of thyroidectomy changed thyroid tissue is removed which could not return to normal.

It is difficult to determine the time when these patients may be called cured, or when they will have no further relapses. It will require studies of series of cases some years after treatment to learn the effect of the treatment and the ultimate results; and it may be necessary to have the metabolic rate estimated to be sure that there is absolute freedom from the influence of a disturbed thyroid.

A few instances have been reported in the literature of results in a series of cases a number of years after the treatment. Means and Aud, in a recent article, have shown in detail the influence of X-ray treatment. Their results were estimated largely by metabolic studies, and were compared with a series of cases in which surgical treatment had been given. They concluded that

results from X-ray treatment are more satisfactory since there were no fatal cases, and that ultimately, especially as far as the metabolic rate was concerned, the results were about the same as in cases in which operation was done. The report is interesting and seems to show that the X-ray has some influence on thyroid activity.

Mortality following surgical treatment is due principally to an increased hyperthyroidism which occurs in spite of treatment. There is practically always an increase in the hyperthyroidism immediately after operation. Patients who come for treatment while they are at the height of an attack or who are getting rapidly worse are not good surgical risks, and it is best to try to carry them past the crisis before operation. A review of our early cases is interesting in showing that most patients who did not survive the operation were those who were operated on at the time of a crisis. Unfortunately, however, not all patients will survive if they are not operated on. In our experience some patients grow progressively worse in spite of treatment, and each year a number of patients are treated in which we are unable to stop the progression of the toxemia. We have learned that a larger percentage of patients die at this time if they are operated on than if they are treated by rest and increased elimination. Some mortality in hyperthyroidism is unavoidable no matter what form of treatment is employed. With the help of Dr. Arnold Jackson, I have recently reviewed, as accurately as possible, the results obtained in 100 consecutive cases of hyperthyroidism in which operation was done in the year 1914. The present condition of the patient had to be estimated, to a certain extent, from replies to letters, although many of the patients had been seen and examined repeatedly since their operations. The mortality in the cases in which a thyroidectomy was performed was 2 per cent.

Of this group of 100 consecutive patients operated on in 1914, we have been able to trace more than 90 per cent. Sixty-six per cent of these are free from all signs of the disease, at least six years after the operation. Similar findings were noted several years ago in a report of our patients operated on in 1909.* In both instances, besides the patients who were completely cured, there were a number who were free from all symptoms of the disease most of the time, or they were so much improved that they considered themselves practically well, although they had some evidence of former hyperthyroidism. Apparently the last symptom to disappear is the exophthalmos, which is present in about 70 per cent of the cases before treatment. Slight nervousness persists for some time after most other symptoms have disappeared. In addition to the 66 per cent of patients who were cured, 13.5 per cent reported that they were markedly improved, and 5.5 per cent that

they were slightly improved. Metabolic studies were not made of these patients before operation. Eleven of the 100 patients died after leaving the clinic. Most of these patients were much better for some time, and were apparently cured of their hyperthyroidism. Several, however, died in relapsing attacks.

It happened that not one of the 100 consecutive operations performed in the beginning of 1914 was a secondary thyroidectomy for a recurrence. During the entire year, however, 387 operations were performed for exophthalmic goiter, fifteen (3.8 per cent) were secondary thyroidectomies for recurrences that had taken place within an average of twenty-two months after the primary thyroidectomy.

The series studied in 1909 showed only 45.4 per cent cures; in the series in 1914, 66 per cent were cured. A possible explanation of this difference is that in the later series of cases more than one lobe of the gland was removed. I feel sure that the subtotal thyroidectomy now performed will produce much better immediate and ultimate results than were formerly obtained by the lobectomy.

Those especially interested in the medical treatment of goiter have commented adversely on the cosmetic results of these operations. This criticism was a just one some years ago, but modern technic has improved greatly, both with regard to the manner of making the cervical incision and the manner in which the different tissues of the incision are closed, so that the scar following an operation for goiter is usually much less conspicuous than it was formerly. It is not nearly so noticeable as a slight enlargement in the thyroid gland which usually occurs following any other form of treatment, and should not be considered a contra-indication to operation. One distinct advantage of subtotal thyroidectomy over lobectomy is that it leaves a symmetrical scar. Lobectomy should only be performed in those cases in which a subtotal thyroidectomy would seem to be too severe a procedure for one stage. In the very severe cases, especially those in which the toxemia has resulted in a dilatation of the heart with broken compensation, lobectomy should first be done on one side, and then on the other, as soon as the reaction from the first procedure has subsided. Just enough thyroid tissue should be saved to maintain normal function.

CONCLUSIONS.

At the present time we are more than ever impressed with the importance of the changes in the thyroid in its relation to the cause of hyperthyroidism.

The most important consideration is the natural course of the disease, as outlined by Plummer, and by keeping this in mind rational treatment may be carried out.

While medical treatment, X-ray, and radium exposures probably modify the symptoms to a

* Judd, E. S. and Pemberton, J. D.: Results of Operations for Exophthalmic Goiter. *Surg., Gynec., and Obst.*, 1916, xxii, 269-274.

certain extent, it is not certain just how much they alter the natural course of hyperthyroidism.

Subtotal thyroidectomy actually removes changed tissue; as a result the metabolic rate is reduced approximately to normal, and the symptoms subside very quickly in a great majority of the cases.

EXOPHTHALMIC GOITER.

(100 CONSECUTIVE CASES IN 1914.)

Average duration of symptoms.....	21 months
Average durations of symptoms, minus 13 cases of four years' duration.....	13 months
Patients with nervousness	98
Patients with tremor	93
Patients with dyspnea	84
Patients with palpitation	89
Patients with tachycardia	79
Patients with loss of strength.....	89
Patients with loss of weight.....	89
Patients with vomiting	34
Patients with prominence of eyes.....	70
Patients with change in voice.....	25
Patients with heart markedly enlarged.....	19
Patients with heart moderately enlarged.....	38
Patients with murmurs	33
Patients with edema	20
Patients with exophthalmos	67
Patients with thrill	48
Patients with bruit	72

MISCELLANEOUS DATA.

	Cases	Average Age
Number of females	83	34.3 years
Number of males	17	36.6 years
Average age of patient at onset of goiter	31 years, 4 months	
Average time since onset of goiter.....	3 years, 8 months	
Average normal weight.....	137.3 pounds	
Average weight at time of operation	121.8 pounds	
Average pulse rate before operation	122.6	
Average systolic blood pressure.....	145.2	
Average diastolic blood pressure.....	75.6	

ENLARGEMENT OF GLAND.

	Cases
Right and left lobes	79
Right, isthmus, and left.....	11
Right	4
Left	3
Isthmus	1
No enlargement detected	2

OPERATIONS.

	Cases
1 ligation previous to thyroidectomy.....	30
2 ligations previous to thyroidectomy.....	34
Primary thyroidectomy	36
1 lobe removed	4
1 lobe and isthmus removed	20
1 lobe, isthmus, and part of other lobe removed	64
Part of each lobe removed	12
Average time elapsed since operation.....	6 years

RESULTS OF OPERATIONS IN MORE THAN 90 PER CENT OF THE 100 CASES.

Cured	66.0 per cent
Markedly improved	13.5 per cent
Slightly improved	5.5 per cent
Dead (2 patients died in hospital).....	15.0 per cent

PRACTICAL POINTS IN GOITER SURGERY.*

By G. W. COTTIS, M.D., F.A.C.S.,
JAMESTOWN, N. Y.

THE term goiter is used, in our present state of ignorance, to designate various enlargements of the thyroid which are probably the end results of many totally different etiologic factors. Hence the multiplicity of theories, each applicable to certain cases and none applicable to all cases. Until some medical genius solves the puzzle of etiology, we must be content to work for improvement in our methods of treatment.

As its title implies, this paper aims only to present a few factors involved in reducing mortality, improving end results, and avoiding surgical complications. For this purpose it is convenient to divide the subject into three parts: (1) Classification and selection of cases, (2) anesthesia, (3) operative technic.

I. *Classification.*—For practical purposes it is sufficient to divide goiters into three classes:

- (a) Toxic Goiters. (b) Non-toxic Goiters.
(c) Malignant Goiters.

Toxic Goiters include:

Acute thyroiditis.
Hyperplasia—Primary (exophthalmic goiter); secondary (toxic colloid goiter).
Toxic adenomata.
Iodine Basedow.

Non-toxic Goiters include:

Physiologic enlargements of adolescence and pregnancy.
Colloid goiters.
Adenomata.

Statistics on the relative frequency of toxic and non-toxic goiters must vary greatly, because there is no standard by which we may decide just where to draw the line. In the case of mildly toxic goiters it must depend on the judgment of the clinician.

Still more confusing is the improper use of the term "exophthalmic goiter." If Crotti is right in assuming that exophthalmic goiter is a toxic thyroiditis (and his reasoning is very convincing), then this condition is quite different from that of toxic adenoma, though per-

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

haps identical with that of toxic colloid goiters. This distinction was long ago emphasized by Plummer. In cases of true primary exophthalmic goiter we find: (a) History of toxic symptoms beginning soon after or even before the recognition of thyroid enlargement, (b) Exophthalmos or some widening of the palpebral fissure, and (c) Parenchymatous hyperplasia. Secondary hyperplasia may occur in a colloid goiter and produce the same clinical picture—secondary exophthalmic goiter.

On the other hand, toxic adenomata may form an obvious goiter long before toxic symptoms occur, and they never cause exophthalmos. These cases should not be classified as exophthalmic goiters, even though they may cause a fatal thyreotoxicosis. In spite of the similarity in the clinical picture there is a difference both in prognosis and treatment.

Selection of Cases.—The physiologic goiters of adolescence and pregnancy are medical rather than surgical problems. Adolescent goiters may be largely prevented by the prophylactic use of iodine, as shown by Marine in his work with school children. A large percentage will disappear under treatment or without treatment. A smaller number will later require surgical treatment because they have continued to grow and produce pressure symptoms or deformity. Another group will finally reach the surgeon because the over-use of iodine or thyroid extract by the family physician will result in thyreotoxicosis, which does not always subside with the discontinuance of the iodine. I have seen one death from iodine Basedow, and many cases coming to operation for relief of hyperthyroidism date their toxic symptoms from a course of treatment for the reduction of a simple goiter.

In general, non-toxic goiters should be given a chance to subside under medical treatment. Even large colloid goiters, if not of too long standing, will respond to medication. Adenomata usually do not. Operation is indicated for relief of pressure symptoms or for cosmetic effect.

The selection of toxic cases is not so simple. It is universally taught that we must not operate at the height of a crisis, that hyperthyroidism occurs in waves, and that the time of election is between the waves. Nevertheless, we have seen a woman of twenty-three develop the disease in the course of a few weeks, grow steadily worse, and die within a few months of the onset, without ever showing the slightest remission under absolute rest, while the surgeon waited for a favorable time to operate.

On the other hand, are those cases which closely simulate hyperthyroidism, but which do not respond to operations on the thyroid.

These cases do not usually show much thyroid enlargement, but neither do many of the most severe types of primary exophthalmic goiter. Unless the Goetsch test proves to be a specific means of differentiation, we believe that the presence of exophthalmos is the best criterion. To express it dogmatically for brevity's sake:

Thyreotoxic symptoms, with or without palpable goiter, if accompanied by exophthalmos, indicate exophthalmic goiter.

Thyreotoxic symptoms, with obvious goiter and no exophthalmos, indicate toxic adenoma or colloid goiter.

Thyreotoxic symptoms without goiter and without exophthalmos, indicate a doubtful case, probably not amenable to thyroid surgery.

It is in the exclusion of this last class of cases that the Goetsch test will be of the greatest value if it is proven to be negative in all non-thyroid toxicoses.

II. *Anesthesia.*—In some cases the method of anesthesia is perhaps the least important part of the technic. In others it is probably the decisive factor in determining the outcome of operation.

In removing simple non-toxic goiters or those which are only mildly toxic any established method is justifiable—local anesthesia alone or combined with gas-oxygen, ether inhalations or colonic ether. All of our first fifty operations were performed under local anesthesia alone. This method undoubtedly adds to the strain on the operator, prolongs the operation, and in case of hemorrhage, necessitating forcible retraction for better exposure, is a serious embarrassment. For these reasons we now reserve it for those cases where it is especially indicated, and as a routine general anesthetic we use Gwathmey's colonic ether method. This presents some distinct advantages. First, it is the most effective way of "stealing away" the patient, because it is administered in bed as an enema and the patient simply becomes drowsy and goes to sleep without any realization that an anesthetic is being given. Second, it causes less post-operative coughing and vomiting than ether inhalation does. Third, it permits the operator greater freedom by eliminating the anesthetic facemask. Fourth, it uses the minimum amount of ether.

Local anesthesia alone is indicated in all ligations, in the removal of simple goiters from aged patients whose heart or kidney function is much impaired, in case of large goiters of long standing which cause much pressure on the trachea and in all extremely toxic cases.

In resections in very toxic cases we believe local anesthesia to be safer than any form of

general anesthesia. Furthermore, it permits a more accurate estimate of how well the patient is standing the operation. If she becomes excessively restless and dyspneic and complains of an increase in her subjective symptoms, it is best to discontinue the operation, pack the wound with loose gauze wrung out of Dakin's solution or eusol, and complete the operation a day or two later.

For successful local anesthesia it is by no means sufficient to merely secure analgesia of the operative field. *The patient must be kept comfortable.* In prolonged operations the enforced immobility on the ordinary table becomes very irksome and causes more discomfort than the operation itself. For this work a six-inch hair mattress is substituted for the ordinary thin pads on the table.

A tactful nurse should be assigned as "comforter." Her chief duties are to talk reassuringly to the patient, see that the head is comfortably supported, and apply ice-cold compresses to the eyes and forehead. The latter simple measure is wonderfully effective in quieting nervousness.

The practice of allowing the head to hang over a sandbag placed under the neck in order to throw the goiter into prominence is bad. It is uncomfortable during the operation and it often causes aching pains in the back of the neck which distress the patient for two or three days after operation. It is better to support the interscapular space and allow the head to fall back with the occiput resting on a firm pillow. One may observe the principle while being shaved in a barber's chair, where comfort is secured in an ideal thyroid posture, with no support whatever beneath the neck.

Every one who has operated on toxic cases under local anesthesia has been embarrassed by the sudden appearance of acute hyperthyroid symptoms during the operation. The extreme restlessness, with dyspnea, palpitation and fear of impending death, bears a striking resemblance to the symptoms present in a strongly positive Goetsch test. The almost universal use of adrenalin in the novocain solution suggests that this really is a Goetsch reaction. We believe that since we have omitted the adrenalin we have had much less trouble of this sort. If, in an extensive infiltration, four ounces of solution, containing perhaps ten minims of adrenalin solution to each ounce, does not make trouble, then the Goetsch test with seven minims must be negative in Graves' disease, and this we know is not the case.

III. *Technic.*—Operations on the thyroid are now so well standardized that any general description here would be superfluous. However, certain minor details may be worth dis-

cussing, for in no other class of surgery does attention to detail pay larger returns.

Simple Goiters.—Where the goiter consists of a single or a few well-defined adenomata, the operation is much simplified by enucleation of the tumors. A needlessly difficult lobectomy or resection is often done because an encapsulated tumor is disguised by a thin covering of thyroid tissue. In such cases an incision over the most prominent part of the enlarged lobe, if carried to a depth of a quarter or half an inch, will reveal the hidden tumor, which can be shelled out with relative ease. A continuous catgut suture obliterates the space and brings together the cut thyroid edges, leaving a practically normal gland behind.

If multiple small nodules are found throughout the goitrous mass, it is best to dislocate both lobes, search for healthy tissue and resect the rest. If this is not done, one may find that after one diseased lobe has been removed all the normal tissue has been removed with it, the second lobe being entirely pathological. We are at present feeding thyroid tablets to one such patient who showed symptoms of myxedema about two months after operation for large diffuse colloid goiter of both lobes.

In all operations under general anesthesia the posterior part of both lobes should be left *in situ* by resection of the anterior portion. If a surgeon prefers to do the easier operation of lobectomy he should always do it under local anesthesia, to prevent injury to the recurrent nerve. We once ligated the inferior thyroid artery close to the lower pole and were preparing to cut between ligatures, when the patient began to cough and talk in a whisper. Her voice returned immediately when the ligatures were removed. Although the vessel was in plain view, we would certainly have cut the nerve if the patient had been under ether.

Even under local anesthesia a double lobectomy, leaving only the upper poles, should never be done. As a result of such a procedure in a young girl on whom we operated for classical exophthalmic goiter, we secured a most gratifying cure of the hyperthyroidism, but this did not compensate for the necessity of keeping the patient alive by the use of parathyroids and calcium. Tetany of a most severe form developed on the third day. It was controlled by medication, but six months later the discontinuance of treatment was followed within forty-eight hours by tetanic convulsions. We undoubtedly removed all the parathyroids with the lower one-half of the two lobes. We are so familiar with the text-book description of the four parathyroid glandules that we easily forget the possibility of there being but one present in a given case. If a surgeon is so unfortunate as to meet such a

case and remove that one little gland he will never again take the chance of removing the posterior capsule, however much it might simplify the operation.

Certain large diffuse goiters are rather frequently met which wrap themselves around and well back of the upper end of the trachea. In dislocating them we are likely to traumatize the nerves supplying the pharyngeal muscles. The result is that for some time after operation the patient is unable to swallow even water, because it flows up into the nose or into the larynx, a most distressing complication. Crile seeks to avoid this by drawing the lobes slowly over toward the midline while clamping and cutting the tissues put on stretch along the outer border, until enough of the gland is exposed for resection, leaving the posterior portion attached to its bed. In this type of case Crile's technic is better than the usual method of dislocating the lobe by passing the finger behind and dragging the whole lobe away from its posterior attachments. Fortunately, there is a simple method of dealing with these cases of pharyngeal paralysis. If a patient chokes when trying to swallow fluids, let her turn on her face with her head over the side of the bed, place the glass on the floor or on a low stand, and let her drink through a tube—*uphill*. We once had a patient try in vain to drink for four days after operation before we learned of this strategy. She took all her nourishment in this way for a week before she regained normal control of her pharynx. Needless to say, had we been unable to feed her by mouth for eleven days it would have constituted a serious complication.

Toxic Goiters.—Ligation of one superior thyroid artery is indicated in all cases of true exophthalmic goiter. The degree of post-operative hyperthyroidism is not always proportional to the severity of the symptoms. Ligation furnishes an index to the patient's reaction to operation and tells us whether it is safer to do an early resection or merely to ligate a second vessel and await further improvement. It is true that in some cases preliminary ligation is not necessary, but since we cannot with certainty select these cases it is indicated for safety's sake and it leads to improvement in all cases which can be helped by operation.

On the other hand, in the case of a single encapsulated toxic adenoma, a ligation does little or no good unless we can palpate and tie a pulsating vessel leading directly into the tumor. We have had two patients die after ligation of the superior thyroid, and one of these was of the type referred to. The patient had a large, smooth mass in the right lobe and was extremely ill after about three years of

thyreotoxicosis. During this time she had grown steadily worse without any well-marked remissions. The ligation seemed to act as the last straw, and she died a week later without at any time showing improvement to justify further operation.

Shortly after this experience we had a man with a large, well-defined adenoma. He presented the typical syndrome of Graves' disease without ocular signs. His heart action was extremely bad, pulse 140 with arrhythmia and poor quality. Fearing that ligation might deprive us of our last chance, as it did in the preceding case, we enucleated the tumor under local anesthesia. There was surprisingly little reaction, improvement was rapid, and in a month the patient was at work and reported that he felt better than he had in years. Section showed a very cellular adenoma. Is it not logical to assume that in these cases ligation merely excites the tumor to increased activity without sensibly diminishing its blood supply, while enucleation is safe because the entire source of the toxic substance is removed at once, leaving nothing to cause post-operative toxicosis? If so, the indication is quite different from that in true exophthalmic goiter, where ligation does diminish activity and where primary resection leaves behind enough active toxin-producing tissue to perhaps cause death.

In cases of diffuse hyperplasia at the time of ligation, and especially a ligation of the inferior thyroid, where a considerable portion of one lobe can easily be exposed, we have passed two heavy silk ligatures, one around the pole and one through the lobe as far as possible from the pole. The latter is passed on a large, full-curved needle so as to include as much tissue as possible, and tied slowly and tightly to cause the greatest possible amount of strangulation. At a later thyroidectomy the tissue included between the two ligatures is strikingly different in appearance from that of the opposite lobe. It is pale, firm, and bleeds very little on section. The effect of this procedure is almost equivalent to that of resection of a corresponding amount of tissue. It is of especial value in the very toxic cases.

The most difficult problem in thyroid surgery is still that of post-operative hyperthyroidism. In spite of the most careful attention to Crile's principle of anociation—stealing away the patient, local anesthesia, and gentle handling of the tissues—this is still the chief cause of mortality. Other things being equal, we believe that it is increased by undue loss of blood, and we intend to transfuse the next patient in whom it becomes alarming. We have not tried Crile's refrigeration treatment, but in the severe cases, with high temperature

and delirium, it seems logical and we shall use it when the occasion arises.

The best treatment is undoubtedly preventive and the most important factor is the surgeon himself. Proper selection of the time to operate, expertness in the use of whatever anesthetic is chosen, ligation both as a preparation for resection and as an index to the patient's reaction, surgical judgment in determining how much to do and when to stop, and the dexterity which limits both trauma and hemorrhage—these are the things which must still spell life or death for five or ten per cent of hyperthyroid patients. And the men who will secure the best results are those who, in addition to training and manual dexterity, possess the scientific imagination whereby at the time of operation they see the patient as she will be tomorrow.

SOME SURGICAL AND NEUROLOGICAL ASPECTS OF PERIPHERAL NERVE INJURIES.*

By BYRON STOOKEY, A.M., M.D.

NEW YORK

AMONG the many features of neurological and surgical interest in peripheral nerve injuries, two have been selected whose importance and also whose limitations, if more generally appreciated, might help to stress the need of definite methods of examining, and safeguard against surgical procedures in themselves improbable of success.

A short time ago, while reviewing the literature in a group of nerve injuries and nerve operations, it was quite common, unfortunately, to find that the examination had been lacking in completeness, and that unfounded interpretations were offered as evidence either of no injury or of return of function. Judging by recent reports, it would seem that the experience gained during the past years has not awakened the neurologist and neurosurgeon to the necessity of a thorough and painstaking study of these injuries.

Not until the examination of nerve injuries is made complete, not only before and after, but during the operation, will there be any reliable advance in our final estimation of nerve injuries and their management.

The examination of the patient is not adequate unless it includes among the usual data, an effort

to reconstruct the probable mechanics of the injury, and the direction of the injuring force, so that an attempt may be made to estimate the extent of the trauma. This is important in evaluating the probable type of injury, whether it be concussion, interruption, injury by bony fragments or inclusion by callus.

The sensory examination should be carefully charted, at each examination, so as to form a basis for future comparison. The terms epicritic and protopathic, as the author pointed out some years ago, should be discarded. Extensive examination and further investigation has shown that the terms are not tenable on either anatomical or clinical grounds. In their stead, each form of sensation should be specifically designated, using the term of the stimulus employed in evoking it, as pin-prick area, cotton-wool area, etc. It seems to me that in peripheral nerve injuries for the present, at least, greater advance perhaps may be gained by use of the term of the quality of the stimulus employed. For most clinical purposes, light tactile such as evoked with a small tuft of cotton packed into a quill and pulled out into a fine strand, and pin prick or extreme degrees of temperature suffice. If the latter is employed, the temperature may be readily graded and known stimuli used. Cobb, in a very valuable paper, has clearly shown that sensory examination to be of value must be made with constant and known stimuli, alike both in quality and quantity, in order that comparison may be made.

In examination of light touch, as pointed out previously in an early paper, the part must be stroked longitudinally in order to avoid impinging upon adjacent areas subserved by nerves not involved. In this manner, the author was able to demonstrate the sensory supply of the musculospiral nerve to the dorsal part of the distal phalanx of the thumb, heretofore attributed to the median nerve. Indeed, it might be said that the only *exclusive* sensory supply of the musculospiral nerve in the hand is this small area on the dorsum of the thumb. If longitudinal stroking be not used, the median area, which corresponds to the lateral borders of the nail, is stimulated and median nerve reaction evoked.

The sensory examination is of value not only in diagnosis of the lesion, differentiation of a functional element superimposed, but also of practical service in determining regeneration.

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The progressive shrinking of the borders of sensory loss is an excellent guide to regeneration. There would seem to be a distinct difference in the return of sensation as regards the affective and discriminative sensibility when the same quantitative stimuli are employed. The finer appreciation, *i. e.*, cotton wool and moderate degrees of temperature return at a later period than the affective forms of pin prick and extreme degrees of temperature. It is, of course, possible that that form of sensation is the first to return which is evoked by a stimulus with the greatest intensity. Such, at least, might be suggested to explain the difference in the rate of return. We also know that the forms of pain and temperature centrally have more interposed neurones and that such interposition in the path tends to raise the threshold of appreciation and to intensify the stimulus.

Immediate Return.—As the result of experimental work and study of the histological processes of regeneration, immediate return of function following suture cannot take place, since in any complete injury of the nerve trunk the distal segment degenerates and can no longer transmit impulses. Following suture, return of conductivity cannot occur until the neuraxis have grown out from the distal segment and reform motor end plates. In order to accept immediate return of function, the theory of peripheral regeneration must be predicated. In my own series of cases, I have never seen an immediate return of function following suture, although it has been carefully looked for. Generally, such return of function can be explained by abnormalities of nerve supply, communications between two nerves, such as the ulnar and median, or the median and musculocutaneous, which are not extremely rare (occurring in the median and musculocutaneous in approximately 75% of nerves examined), as well as substitution movements which may cleverly stimulate the action of the paralyzed muscles, and not detected unless the individual muscular actions are studied.

The muscular examination is of particular importance in formulating a more precise diagnosis. Too much stress cannot be laid on the necessity of studying *individual* muscular action rather than *total* movements. To say that the patient is able to flex the forearm upon the arm, or that he is able to pronate implies, not only less than nothing, so far as the individual nerve is concerned, but is, in addition, misleading. Such movements, and many others, as Létivant (1872), has shown, may be accomplished normally by any one of several muscles, for example, the flexion action of the biceps, supinator longus and the brachialis anticus. Normally, they all take part in the total movement of flexion of the forearm on the arm. Individually, each may

accomplish the movement without the assistance of the other. Normally they are synergists and motofacient factors in the total movement of flexion. In injury to the musculocutaneous, in which there is paralysis of the biceps, flexion may be accomplished by the supinator longus, through the musculospiral nerve. Mackenzie's volume on muscular action states that the supinator longus is not a flexor of the forearm. This view my experience cannot sustain. Indeed, it would seem that the supinator is primarily a flexor. It is also interesting to note that its segmental supply is the same as the biceps, namely, the fifth and sixth cervical.

In testing muscular action it is desirable not only to observe the individual muscular contraction, but also to palpate either the muscular belly or its tendon. This will enable the examiner to determine whether or not a given muscle is taking an active part in the performance of any given movement. Erroneous interpretations of paralysis may thus be avoided. If *individual* muscular actions are studied in this manner, rather than *total* movements, accuracy in diagnosis will be furthered, and, perhaps, less may be heard of immediate return of function.

In order that there may be any real advance in our final estimation of the relative value of different neurosurgical procedures, the examination of the nerve during operation should be noted with precision. At the time of operation, in consideration of the mechanics of the field, the surgeon should attempt to estimate in terms of percentage, the probable return of function to be expected. Permanent and irreparable injuries such as are due to the nature of the anatomical field, or the condition of the nerve ends, the manner and completeness of approximation, or, if a graft has been used, an exact estimation of the relative amounts of the cross area covered, both centrally and distally, should be noted. If muscular branches are destroyed by the special site of the lesion, though nerve suture were done and regeneration had taken place, no return could be anticipated in these muscles. These are conditions which cannot always be controlled, and which may play an important rôle in the evaluation of future return of function. Such modifying factors cannot be ignored in the final estimation of the value of one method over another.

It is important that the limitations of each method be determined so that the surgical methods employed in neurosurgery do not in themselves prevent or limit the probabilities of success.

The causes of failure and the factors which limit regeneration may reside within the nerve, outside the nerve or in the method of repair selected.

Ischemia of the part, due to concomitant blood-vessel injury, causing fibrosis of the muscles and changes in the distal nerve segment is not rare.

Direct injury of the muscle bellies, tendons and joints, together with subsequent contractures about them may prevent adequate mechanical treatment, correction of overstretching of the muscles and the application of massage and electricity, essential to prevent further atrophy and wasting. The loss of proprioceptive stimuli (afferent impulses from the bones, joints, muscles and tendons), due to distortion of the nerve pattern, may diminish the functional value of motor regeneration in that the patient is unable to evaluate the force of the muscles and the position of the joints. Even distortion of the motor pattern may impair the return of synergistic movements, such as dorsiflexion of the wrist on grasping, etc. Excessive scar tissue may prevent union of nerve ends, and make the formation of a suitable nerve bed impossible. A poor nerve bed diminishes the chance of successful regeneration. In a large percentage of the cases, one might say that the effort at nerve regeneration is a constant struggle between the downgrowth of neuraxes and the overgrowth of scar tissue. Sclerosis of the distal segment may occur, and usually increases with time. Interstitial changes are specially found in partial lesions and may cause marked contractures and degenerative changes in the tissues. A long interval between the injury and repair decreases the chances of recovery, while the more distal the injury, the poorer the degree of regeneration. In those cases requiring operation, the earlier the operation the earlier and more complete the return. *Early exploration* may mean early recovery. Finally, the surgical method employed may in itself be the cause of the failure or limit the degree of regeneration.

The pendulum has swung to the opposite pole concerning the time of operation. At first, it was recommended to operate all nerve injuries; then, to wait and operate only a very few cases. It is to this latter stage to which most neurologists and neurosurgeons have come. To my mind, neither view is correct.

A large number of cases have been reported who have begun to show the first evidences of regeneration eight and nine months after injury and have gone on to subsequent recovery. Furthermore, we are told not to despair of a case under twenty or even thirty months. To select, then, as has been the custom, arbitrarily, three or four months as a period to wait before operation does not seem to be based on any more rational grounds than that in some cases such delay is essential to avoid recrudescence of infection. Since regeneration may occur in the sixth, seventh and eighth month, or even at a later period, it does not seem rational to select a period of three or four months in which to await spontaneous regeneration, even though a large number may fall within this category. In effect, the operation at the fourth month becomes nothing

more than a late exploration. The neurologist must, of necessity, await a comparatively long time, even for the earliest evidences of regeneration. At present there is no reliable sign of early regeneration, and even those cases which show signs of regeneration may be finally halted in the process by scar or callus.

However, if the field were known, *i. e.*, whether there is anatomical interruption or only physiological block; the status of the surrounding tissues, and the relation of the nerve to them determined, such as might be gained by early exploration, we might then wait for regeneration with some degree of assurance, being better able to interpret the clinical signs of regeneration.

Early nerve *exploration* seems to me to offer a possible means of diminishing delay and increasing the normal factors of regeneration. To explore a nerve involves little danger to the patient, and may offer a maximum of advantage.

Most nerves are more or less superficial and their exposure is comparatively simple.

In any nerve injury where there is reason to believe, from the history of the trauma, that the nerve may be severed or imbedded in scar or callus, etc., nerve *exploration* should be done as early as the wound may admit. However, nerve exploration should be done by one familiar with the histology of nerve repair and the gross pathology of injured nerves as found at operation. The *greatest conservatism* during nerve exploration cannot be too urgently insisted upon. The rule should be *radical nerve exploration* and *conservative nerve operation*.

In a certain number of cases at exploration one may be *unable* to decide with certainty whether nerve suture is indicated or whether the nerve should be left alone. On the other hand, those with gross interruption may be at once sutured with a saving of much time, and the assurance of a more complete return of function. The anatomical field is generally worse than is indicated clinically.

The *limitations* of nerve exploration must be realized, for *only* after an appreciation of the limitations may nerve exploration be *safely* advocated.

For this purpose, nerve injuries may be divided into three main groups. One, those with gross anatomical interruption; two, those on the other extreme, having only apparently slight injury, yet with physiological interruption; third, a group between these two extremes, having more or less gross anatomical injury, shading off on the one hand into the first group, and on the other, into the second. In this middle group, nerve exploration will give little definite information as to what procedure should be followed, even after palpation and electrical examination. It is this group that the neurosurgeon doing early exploration will do well to *leave alone*. He

should reconstruct the field and await subsequent events. However, with the other two groups, the indications will be definite. In the first, nerve suture, obviously where there is anatomical interruption, and in the second group, where there is only slight injury, obviously, the nerve should be left alone.

Since exploration is done early, many cases which might not have gone on to spontaneous recovery, may be converted into recoveries, and abortive efforts at regeneration converted into successful regeneration by correcting the field, excising scar, or infolding it upon itself, performing liberation or injecting salt solution within the nerve—all harmless procedures which do not impede but rather facilitate regeneration. The inexperienced, or those unfamiliar with the histology of regeneration may be tempted to be radical and perform nerve suture, failing to appreciate that many times, though the nerve trunk may appear to be badly damaged, it is still capable of permitting downgrowth of neuraxes, perhaps better than after suture, since there is low dispersion or distortion of the nerve pattern.

If the limitations of nerve exploration are appreciated, the advantages which may accrue from early exploration are many. The earlier the exploration, the clearer the anatomical field, and the less the scar within the distal segment of the nerve. Excessive and dense scar may be delimited in its growth, the nerve prevented from becoming bound down in a fixed and retracted position or imbedded in callus. By correcting the field, the nerve is left in a position fairly secure from strangulation and everything possible is done to facilitate regeneration. The struggle between regenerating axes and scar is reduced to a minimum. Further, since the anatomical field is known, any delay or interference with subsequent progressive regeneration may be at once appreciated and precise further operative procedures indicated.

The anatomical field being known, Tinel's sign, as the author has previously pointed out elsewhere, is of the greatest value; indeed, it is only when the anatomical field is known, that any reliance may be placed in this important sign. To the large group of cases in which there has been loss of continuity will the greatest benefit come, since they will be saved a needless wait of months before the conclusion is reached that regeneration is not going to take place. Not only will much time be saved, but the ultimate return of function be the more complete.

The selection of a proper method of repair is essential to success. Methods not based on a clear conception of the normal histological course of regeneration and which do not respect the normal nerve pattern can have but a limited success.

To turn a flap from either the central or distal segment, as is done in the repair of tendon and advocated by Mackenzie of Portland, is based upon a false conception of nerve regeneration, as has been shown by Huber and Stookey in experimental work, and a critical review of all published cases of nerve-flap operations. This method may not only be of no value, but of actual harm, since the flaps remove a part of the nerve trunk, and thus permanently cut off the neuraxes from channels of downgrowth. By turning down a flap, the neuraxes are unable to gain entrance into the flap, due to the abrupt angle with which the flap is of necessity turned. Thus, the very end sought is annulled. However, if the flap is almost severed from the trunk, it is possible that it may come to lie in fairly good apposition, and serve as a free transplant. It may then transmit neuraxes, however, having the limitations of a single graft, as compared with the multiple graft, with the additional disadvantage of having done injury to the nerve trunk. This is also to be condemned, since a graft taken from any skin nerve may serve equally well or even better, in that, end to end approximation may be better attained and no damage done the parent trunk. Furthermore, the advantage of a multiple graft, instead of a single cable, is that a more proportionate number of channels for the downgrowing neuraxes is afforded.

Other methods to be condemned are suture *à distance*, which Huber has shown to be of no value, and nerve implantation. By this latter method, an adjacent nerve is used, and the central end or distal end alone is implanted into the nerve—the adjacent nerve serving, as it were, as a borrowed track for the neuraxes. However, the neuraxes of the central stump merely abut in the endoneural connective tissue, and there form a neuroma—the neuraxes may descend a short distance, but sooner or later are lost. The distal stump receives neuraxes from the parent trunk, only in proportion to the number of neuraxes which are accidentally cut in the process of implantation—so that whatever success may arise is due to rather poor and partial nerve crossing. Consequently, if nerve crossing is to be done, it would be better to do the operation *as such*, in the first instance.

In a selected number of cases, nerve crossing, partial or complete, may be used. By this method, an adjacent nerve is either partially or completely cut, and the distal segment of the nerve in question sutured to the end of the nerve thus freed. Obviously, only a motor nerve should be used, and preferably one having related cortical centers.

The methods of choice are, first of all, end to end suture, providing satisfactory cross areas are to be obtained both centrally and distally. In certain instances, end to end suture may be ac-

complished by transposition and by nerve-stretching.

Stretching may be done only up to the point of taking up the *normal* laxity within the nerve bed. Further stretching admits of the distance being bridged by tearing the nerve within its course, or from its roots. Warrington has pointed out that excessive nerve-stretching causes karyolysis of the anterior horn cells, with subsequent degeneration of the neuraxes within the central nerve stump—an effect certainly to be avoided.

When the distance to be bridged is too great for any of the above methods, the operation of choice is nerve graft, using either autogenous or homogeneous grafts. The latter may be preserved in alcohol, or on ice, in liquid paraffin, or vaseline. Huber, more than any other investigator, has shown, experimentally, the value of the graft, and their rationale in the histology of nerve regeneration.

The technique of the graft, or other methods of repairs, cannot be included in the scope of this paper. I wish only to signal the *importance* of the most *minute* considerations of technique, not only for nerve graft, but also in end to end suture. An attempt must be made to observe the normal nerve pattern, especially when the injury is near the point at which important branches are about to be given off. Until more exact knowledge of nerve pattern is at hand, such as Elsberg and Riley have notified they are doing, and Marie, Gosset & Meige, Krause and Ingham have done with electrical stimulation, end to end suture must be empirical, using every means to accomplish precise apposition, and prevent axial rotation.

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THE RECOGNITION AND MANAGEMENT OF BLADDER SYMPTOMS IN SPINAL CORD DISEASE.*

By ERNEST M. WATSON, A.M., M.D.,

BUFFALO, N. Y.

(From the Department of Urology, University of Buffalo, and the Urological Service of the Buffalo General Hospital.)

AMONG the most disturbing subjective symptoms accompanying lesions of the spinal cord those secondarily affecting the mechanism of urination are extremely common. The complex innervation of the bladder from the efferent paths of the cord and the well-nigh unlimited source of afferent stimuli, all of which are potential factors in initiating or retarding the act of urination, render a complete understanding of its *modus operandi* extremely difficult.

From the work of Gaskell,¹ Langley and Anderson² we have definite evidence that sympathetic efferent fibers from all the nerves between the first thoracic and second and third and sometimes the fourth lumbar are concerned in the innervation of the bladder and urethra. In addition, the sacral autonomies through their post-ganglionic fibers with their motor cells lying in the vesical plexus near the surface of the muscles they supply, are intimately associated with the above. In the cord proper definite branches from the first, second and third sacral nerves go directly to the vesical plexus, while along the paths in the cord the area in the posterior portion of the lateral columns near the pyramidal tracts is believed to be the path of impulses from the higher cortical centers. From this multiplicity of innervation we can appreciate the difficulty in attempting to interpret the neuropathology of bladder disturbances.

Of the factors concerned in the function of urination there are certain outstanding observations that are of fundamental importance. First, a certain but variable amount of urine must accumulate in the bladder. This naturally is followed by a slow rise in the intravesical pressure or tension. From experimental and clinical evidence³ we know that after a pressure equivalent to 15-18 mm. of water is reached, automatic rhythmic contractions of the vesical musculature are initiated. This phenomenon is associated with the sending out of certain afferent impulses,

* Read at the Annual Meeting of the Medical Society of the State of New York, at Syracuse, May 6, 1919.

chiefly by way of the pelvic nerves to the lumbosacral cord and later to the higher centers. Immediately there are returned efferent pressor stimuli to the bladder wall and also inhibitory impulses to the internal sphincter and associated involuntary musculature about the urethra. By this mechanism the intravesical pressure is increased to 20-30 mm. of water and the involuntary resistance of the vesical sphincter is overcome. The discharge of urine then takes place through the opened bladder orifice, augmented by pressure, voluntary in nature, from a contraction of the abdominal and respiratory muscles.

Bearing in mind the anatomic basis for the function of urination, we may expect from physiological reasoning and we do actually encounter clinically disturbances of urination of quite a varied nature sooner or later in practically all cases of spinal cord disease. Any lesion which interferes with the integrity of the reflex arc may give one or more of the so-called group of bladder symptoms. From the work of Caulk and Greditzer⁴ our attention has been called to the relaxed condition of the internal vesical sphincter in dementia paralytica, post-apoplectic conditions, paralysis agitans, lead poisoning, tabes dorsalis, and tumor or gumma of the spinal cord. This objective finding, if it is extensive enough to involve also the intrinsic involuntary fibers of the posterior urethra, results in an accompanying urinary incontinence of greater or lesser degree. To the above diseases may also be added transverse myelitis and spinal cord injuries, such as fracture of the vertebræ and gunshot wounds of the spine. Another group of two diseases which heretofore seemingly has not directed our attention to the possibility of accompanying bladder symptoms has been reported by Smith,⁵ who found two cases of unexplainable vesical retention, one associated with multiple sclerosis and another with syringo-myelia. One other case of continued vesical retention for a period of over two years has recently come under my observation in a woman whose blood and spinal fluid examinations enabled us to exclude syphilis but who gave a history of infrequent epileptic attacks.

The most recent contribution to our knowledge in the search for a possible cause of certain explained conditions of vesical disturbance, namely, incontinence and large residuals, has been given us by Chute.⁶ Five cases have been collected and studied by him, in which the only demonstrable lesion was a defect in the development of the sacrum. This was shown by X-ray of the sacral spine and has every aspect of being a spina bifida

occulta and was the only suggestive anatomical lesion in the above cases.

Of the essential bladder symptoms encountered in spinal cord disease, incontinence or less frequently retention are the two predominating. The incontinence may be a true incontinence due to the relaxed atonic condition of the musculature about the outlet of the bladder, including the internal or vesical sphincter, the intrinsic involuntary muscles of the posterior urethra, and probably also the external sphincter. In this type the bladder is usually of small capacity and there is very little or no residual urine present. The other form may be of the so-called paradoxical variety in which there is really a retention present and the incontinence is the overflow of a greatly distended bladder. In this latter instance the bladder capacity may be normal but is usually considerably increased.

Before the onset of the above rather characteristic but late symptoms there is usually noted a hesitancy or difficulty in starting the stream, which frequently antedates the more serious complaint for months or years. Another of the earlier disturbances may be an increased frequency, or in some cases while the bladder is undergoing the process of gradual dilatation long intervals between voidings. The former may occur as the frequency from a greatly distended bladder associated with considerable residual urine, or may be present when the bladder capacity is small and the internal sphincter is weak but not relaxed sufficiently to give an incontinence. The bladder that empties itself only at long intervals is one in which the capacity is greatly increased but whose tone is not sufficiently lost to give a large amount of residual urine and which, for the time being, functions satisfactorily.

From the atonic state of the vesical musculature and from the not infrequent occurrence of varying amounts of residual urine, the condition is one which is very prone to infection. Sooner or later, in most of these cases, in many even before the initial catheterization, there is superimposed upon the essential spinal vesical symptoms those of a concomitant cystitis. When this occurs there may be varying degrees of burning, painful voiding and general dysuria.

The early recognition of the vesical symptoms in disease of the spinal cord is of paramount importance, as much can be accomplished for these individuals under a careful routine of functional regularity and rational therapy. In all cases where there may be a question of spinal involvement, the deep and superficial reflexes should be carefully studied. In order to determine their exact status several examinations may

be necessary. The pupillary response, the action of the biceps, triceps and periosteal radials of the upper extremity, the abdominal and cremasteric reflexes, the knee kicks, plantar response and ankle jerk, all are of much value. The Romberg test should also be made. In the rectal examination one frequently encounters a very definitely relaxed external sphincter, which is a very suggestive finding.

The cystoscopic finding may also add much in the way of very positive evidence. With no demonstrable obstruction at the internal vesical orifice, residual urine should be regarded with suspicion. The fine trabeculation of the lateral walls of the bladder often extending well up toward the vertex is extremely common though hardly characteristic. In the advanced cases the flat, atrophic trigone and ureteral orifices that are dilated and do not contract as the urine escapes present a rather typical picture. Perhaps the most helpful cystoscopic finding is the atonic condition of the internal vesical sphincter. The tonicity of this is readily determined by the ease with which the cystoscope (of the concave Brown-Buerger type) may be withdrawn past the sphincter into the posterior urethra. Any relaxation which permits a view of the posterior urethra and verumontanum under these conditions should be regarded as abnormal.

The study of any spinal case is not complete without the data furnished by the examination of the spinal fluid, which should include the spinal fluid pressure, cell count, globulin determination the Wassermann, and the colloidal gold test. Many cases of syphilis may give a negative Wassermann in the blood serum, due to more or less efficient systemic treatment in early life, and yet the spinal fluid Wassermann and colloidal gold test will both be positive.

The management of the spinal bladder calls for a well outlined plan of procedure, covering in many cases a considerable period of time. The first step should be to determine the presence or absence of infection as evidenced by the finding of pus and organisms in the microscopic examination of the third glass of voided urine or the catheter specimen. Every infected case and even the uninfected cases under instrumentation should be given urotropin, at least forty-five grains a day, in courses of several weeks duration. Individuals with residual urine of any appreciable amount, that is, over 100 c.c., should have systematic catheterization every two days, and the more advanced cases every day for a time. This should be followed by a bladder lavage of silver-nitrate solution (10 drops of a 10 per cent solution to a quart of water.) In addition I have found it of distinct advantage to leave in the bladder a half ounce of a 10 per cent argyrol solution. Individuals who still have some degree of tonicity to the musculature about the bladder orifice may be given periodic dilata-

tion of the posterior urethra once or twice a week with the Kollmann dilator, in an attempt to improve the impaired contractions of the intrinsic involuntary musculature of the posterior urethra, and, too, of the internal vesical sphincter itself.

Certain aids may be rendered by the patient himself. From the beginning he should drink copiously of water—1,500 to 2,000 c.c. daily. In addition he should be instructed to inaugurate a certain routine of voiding and pass urine at definite intervals usually not longer than two hours apart. This should be attempted even when the desire is not urgent. After a time many of these individuals are able to accomplish considerable in the way of regularity of function by adhering to such a schedule. As a further effort on the part of the patient, certain remaining factors of urinary control can be better brought under the patient's volition by practising stopping and starting the urinary stream when the bladder is being washed out under the physician's supervision. With the bladder filled the patient is instructed to void about an ounce and then stop, then another ounce and stop. This at first is accomplished very imperfectly, but after a time a very definite improvement can be noted in the voluntary control.

By far the most common lesion of the spinal cord that one finds giving early bladder symptoms is tabes dorsalis, and with this in mind it is well to consider the efficacy of intraspinal treatment for the relief of vesical symptoms. In a recent detailed⁷ study of the course of bladder symptoms in tabetics, under intraspinal therapy, using mercurialized serum, it was found that of the cases having residual urine every one showed a marked decrease in the amount, and in over 40 per cent no residual was obtained after several treatments, in repeated examinations. The most striking response was in an individual habitually carrying 900 c.c. residual, in which none was obtained after six intraspinal treatments. As would be expected, from this objective improvement in bladder function the attendant symptoms of incontinence, frequency and dribbling were also markedly improved, and over 50 per cent of the patients considered themselves cured of their subjective bladder disturbances.

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Correspondence

824 E. 165th St., N. Y.
July 31, 1920.

To the Editor,

NEW YORK STATE JOURNAL OF MEDICINE.

DEAR SIR: In the July number of your JOURNAL there appeared an article criticizing "A. M. A.," which was undersigned by "Jacob Weiss, M.D., New York, N. Y."

Since then I have received letters from all parts of the State, giving me both credit and discredit for the above criticism.

In the medical directory of New York State there is only one "Jacob J. Weiss" listed in "New York, N. Y." As I did not contribute this article of criticism, I would therefore ask, in justice to myself, to have this error corrected, and suggest that the physician who wrote same give his name and specific address, so that he may hear from his friends and adversaries in New York State.

Thanking you, I am,

Very truly yours,

(Signed) JACOB J. WEISS, M.D.

News Items

CHRISTIAN SCIENTISTS ROUT THE DOCTORS.

The Constitutional Convention, June 29th, at a hearing before the Committee of the Whole, turned down Proposition 300.

The Christian Scientists, while numerically insignificant, were nevertheless very active. They maintained a lobby at Springfield since the convention convened last December. The medical profession would profit materially by imitating the political activities of the Christian Scientists.—*Illinois Med. Journal*.

NEW JERSEY REJECTS ANNUAL REREGISTRATION.

At the annual meeting of the New Jersey State Medical Society in June, the scheme for annual registration for physicians, endorsed by the Trustees of the Society, was rejected by the House of Delegates.

District Branches

ANNUAL MEETINGS FOR 1920.

First District Branch—Thursday, October 21st, in Poughkeepsie.

Second District Branch—Date not yet appointed.

Third District Branch—Thursday, October 14th, in Hudson.

Fourth District Branch—Tuesday, September 7th, in Saratoga.

Fifth District Branch—Thursday, September 30th, in Syracuse.

Sixth District Branch—Tuesday, October 5th, in Cortland.

Seventh District Branch—Wednesday, October 6th, in Rochester.

Eighth District Branch—Wednesday, September 8th, in Jamestown.

Medical Society of the State of New York

THIRD DISTRICT BRANCH.

ANNUAL MEETING, HUDSON, N. Y., THURSDAY,
OCTOBER 14, 1920.

"Some Notions of a Country Doctor," Luther Emerick, M.D., Saugerties, President of the Third District Branch.

"Future of the State Society," J. Richard Kevin, M.D., Brooklyn, President of the Medical Society of the State of New York.

"The Necessity of an Annual Registration for Doctors," Hon. Augustus S. Downing, Ph.D., Albany, Assistant Commissioner and Director of Professional Education, New York State Department of Education.

"The Present Status of Medical Practice in the United States, with Special Reference to New York State," M. Edgar Rose, Albany, Director, Division of Child Hygiene, State Department of Health.

"Indications for Mastoidectomy and Operative Procedure Upon the Tonsils," Eugene E. Hinman, M.D., Albany, Instructor in Laryngology and Rhinology, Albany Medical College.

"Sequelæ of Encephalitis Lethargica," Edward Livingston Hunt, M.D., New York, Secretary, Medical Society of the State of New York.

FIFTH DISTRICT BRANCH.

ANNUAL MEETING, SYRACUSE, N. Y., THURSDAY,
SEPTEMBER 30, 1920.

MORNING SESSION, 10.30 A. M. (NEW TIME).

Reading the minutes of the last annual meeting.

"Epidemic Encephalitis," William D. Alsever, M.D., President Fifth District Branch, Syracuse.

"Proposed Health Center Legislation," Matthias Nicoll, Jr., M.D., Deputy Commissioner Public Health, Albany, and Walter H. Kidder, M.D., Oswego.

General discussion.

Luncheon will be served at 12.30 o'clock at the Bellevue Country Club.

AFTERNOON SESSION, 2 P. M.

"Medicine, Old and New," William F. Connors, M.D., Fulton.

"Intestinal Tuberculosis," Lawrason Brown, M.D., Saranac Lake.

"Radium Therapy," Thomas P. Farmer, M.D., Syracuse.

"Polycythemia," Malcolm S. Woodbury, M.D., Clifton Springs.

"Treatment of Benign Neoplasms of the Skin," H. Miller Mitchell, M.D., Utica.

"The Significance of Temperature in the Treatment of Disease," Martin Cavana, M.D., Sylvan Beach.

SIXTH DISTRICT BRANCH.

ANNUAL MEETING, HORNELL, N. Y., TUESDAY,
OCTOBER 5, 1920.

"What is the Future of the Medical Profession?"
Leon M. Kysor, M.D., Hornell, President of the Sixth
District Branch.

"Future of the State Society," J. Richard Kevin,
M.D., Brooklyn, President of the Medical Society of the
State of New York.

Symposium on Cardio-Vascular-Renal Disease.

"Angina Pectoris," James E. Walker, M.D., Hornell.

"The Special Therapeutic Management of Arterio-
sclerosis and Its Relation to the Etiology of the Dis-
ease," N. Philip Norman, M.D., New York.

"Diagnosis and Interpretation of Renal Disease,"
John R. Williams, M.D., Rochester.

"Blood Pressure in Relation to Pelvic Pathology,"
Ross G. Loop, M.D., Elmira.

"Rectal Conditions of Special Interest to the General
Practitioner," Descum C. McKenny, M.D., Buffalo.

"Encephalitis Epidemica," Edward Livingston Hunt,
M.D., New York, Secretary of the Medical Society of
the State of New York.

SEVENTH DISTRICT BRANCH.

ANNUAL MEETING, ROCHESTER, N. Y., OCTOBER 6, 1920.

MORNING SESSION, 10 A. M.

"Meningitis," Joseph Roby, M.D., Rochester.

Discussion opened by Thomas Ordway, M.D., Albany.

"Conjugal Syphilis of the Nervous System," Alfred
Gordon, M.D., Philadelphia, Pa.

Discussion opened by Joseph Roby, M.D., Rochester.

"Congenital Syphilis of the Nervous System," Edward
Livingston Hunt, M.D., Secretary of the Medical Soci-
ety of the State of New York, New York.

Discussion opened by Edward L. Hanes, M.D.,
Rochester.

"The Present Positions of Curative Vaccines in Dis-
eases of the Skin," Grover W. Wende, M.D., Buffalo.

Discussion opened by W. Franklin Plumley, M.D., and
Frederick W. Seymour, M.D., Rochester.

Luncheon at 1 P. M.

AFTERNOON SESSION, 2 P. M.

"The Hypertonic Baby, with Suggestions for Treat-
ment," Albert D. Kaiser, M.D., Rochester.

Discussion opened by DeWitt H. Sherman, M.D.,
Buffalo.

"Cancer of the Breast," Jabez N. Jackson, M.D., Kan-
sas City, Mo.

Discussion opened by Edward W. Mulligan, M.D.,
Rochester.

"Achyilia Gastrica," Joseph Sailer, M.D., Philadel-
phia, Pa.

Discussion opened by Allen A. Jones, M.D., Buffalo.

"The Organization of the Medical Department for
Battle" (lantern slides), Brig-Gen. Arthur Ross,
C.A.M.C., Kingston, Ont.

General discussion.

"The Surgical Treatment of Facial Neuralgia," Mar-
tin B. Tinker, M.D., Ithaca.

Discussion opened by Edgar R. McGuire, M.D.,
Buffalo.

"The Work of the Rochester Dental Dispensary,"
Edwin S. Ingersoll, M.D., Rochester.

Discussion opened by Albert D. Kaiser, M.D.,
Rochester.

Books Received

Acknowledgment of all books received will be made in this
column and this will be deemed by us a full equivalent to
those sending them. A selection from these volumes will be
made for review, as dictated by their merits, or in the interest
of our readers.

HEALTHY LIVING, BOOK ONE. How Children Can
Grow Strong for Their Country's Service. By
CHARLES-EDWARD AMORY WINSLOW, D.P.H. With a
Chapter on Physical Exercises by WALTER CAMP.
Published by Charles E. Merrill Company, New York
and Chicago.

HEALTHY LIVING, BOOK TWO. Principles of Personal
and Community Hygiene. By CHARLES-EDWARD
AMORY WINSLOW, D.P.H. With a Chapter on Sport
and Health by WALTER CAMP. Published by Charles
E. Merrill Company, New York and Chicago.

SELF-HEALTH AS A HABIT. By EUSTACE MILES, M.A.
Published by E. P. Dutton & Co., New York. Price,
\$2.50.

THE UNSEEN DOCTOR. Formerly published in England
as "One Thing I Know: or, The Power of the Un-
seen." Authorized Edition. With Preface by J.
ARTHUR HILL. Published by Henry Holt & Co., New
York.

ALTITUDE AND HEALTH. By F. F. ROGET, a "Privat-
Docent" Professor in the University of Geneva. Pub-
lished by E. P. Dutton & Co., New York. Price, \$5.00.

EATING TO LIVE LONG. By WILLIAM HENRY PORTER,
M.D. With an Introduction by EDWIN F. BOWERS,
M.D. Published by The Reilly & Lee Company, Chi-
cago. Price, \$1.50.

PHYSIOLOGY AND NATIONAL NEEDS. Edited by W. D.
HALLIBURTON, M.D., LL.D., F.R.C.P., F.R.S., profes-
sor of Physiology, King's College, London. Published
by E. P. Dutton & Co., New York. Price, \$4.00.

EXOPHTHALMIC GOITER AND ITS NONSURGICAL TREAT-
MENT. By ISRAEL BRAM, M.D., Instructor in Clinical
Medicine, Jefferson Medical College, Philadelphia,
Pa. C. V. Mosby Co., St. Louis, Mo. Price, \$5.50.

THE FUNDAMENTALS OF HUMAN ANATOMY, INCLUDING
ITS BORDERLAND DISTRICTS. From the Viewpoint of a
Practitioner. By MARSH PITZMAN, A.B., M.D., Pro-
fessor of Anatomy in the Dental Department of
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\$4.00.

THE AMERICAN RED CROSS IN THE GREAT WAR. By
HENRY P. DAVISON, Chairman of the War Council of
the American Red Cross. Published by the Macmillan
Co., New York.

HYGIENE, DENTAL AND GENERAL. By CLAIR ELSMERE
TURNER. With Chapters on Dental Hygiene and Oral
Prophylaxis. By WILLIAM RICE. C. V. Mosby Co.,
St. Louis, Mo. Price, \$4.00.

FUNCTIONAL NERVE DISEASE. An Epitome of War Ex-
perience for the Practitioner. Edited by H. CRICHTON
MILLER, M.A., M.D. Henry Frowde, Hodder &
Stoughton, London, Eng., and Oxford University
Press, New York. Price, \$4.50.

THE SYMPATHETIC NERVOUS SYSTEM IN DISEASE. By
W. LANGDON BROWN, M.A., M.D., (Cantab), F.R.C.P.
Lond.). Henry Frowde, Hodder & Stoughton, Lon-
don, Eng., and Oxford University Press, New York.
Price, \$4.25.

FEMINISM AND SELF-EXTINCTION. By ARABELLA
KENEALY, L.R.C.P. (Dublin). E. P. Dutton & Co.,
New York. Price \$5.00.

THE OXFORD MEDICINE. By Various Authors. Edited by HENRY A. CHRISTIAN, A.M., M.D., and SIR JAMES MACKENZIE, M.D., F.R.C.P., LL.D., F.R.S. Five Volumes, Illustrated. Volume I, The Fundamental Sciences and General Topics. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York.

INFECTIOUS DISEASES—A PRACTICAL TEXTBOOK. By CLAUDE BUCHANAN KER, M.D., Ed., F.R.C.P., Ed. Second Edition. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York. Price, \$17.00.

PLASTIC SURGERY OF THE FACE. Based on Selected Cases of War Injuries of the Face, Including Burns. Original Illustrations. By H. D. GILLIES, C.B.E., F.R.C.S., Major R.A.M.C. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York. Price, \$15.00.

STUDIES IN NEUROLOGY. By HENRY HEAD, M.D., F.R.S., in conjunction with W. H. R. RIVERS, M.D., F.R.S.; GORDON HOLMES, M.D., C.M.G.; JAMES SHERREN, F.R.C.S.; THEODORE THOMPSON, M.D.; GEORGE RIDDIOCH, M.D. Two Volumes. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York. Price, \$17.00.

Book Reviews

LABORATORY MANUAL OF PHARMACOLOGY. Including *Materia Medica*, Pharmacopædics and Pharmacodynamics. By A. D. BUSH, B.Sc., M.D. F. A. Davis Company, Philadelphia, Publishers. 1919. Price, \$3.50 net.

Dr. Bush calls his book a *Manual* of Pharmacology. He might well have called it a *Course* in Pharmacology, so fully does it cover the subject. It is a masterpiece of brevity with the added and unusual quality of comprehensiveness. Those drugs having definite and known action are shown with the aid of colored diagrams that are far more illuminating than are similar illustrations used for this purpose. Specially designed graphs adapted to each drug should be of much assistance to the student in his laboratory work; this feature, too, will be welcomed by the instructor. The work is the product of an experienced teacher and may be termed both ingenious and unique. Any book that tends to get away from the beaten path in the matter of instruction in pharmacology is a welcome addition to the literature on the subject. Mechanically the work is well above the average. M. F. DeL.

THE WOMAN OF FORTY. By DR. E. B. LOWRY, author of "Herself," "Confidences," etc. Published by Forbes & Company, Chicago, 1919. Price, \$1.25.

Dr. Lowry is the author of a series of little books on sex hygiene, the care of the baby and home nursing, which have attracted considerable attention.

The volume under consideration here seems to have been written on a ground-work of common-sense, in a pleasing style, not too technical nor complicated for the lay reader, to whom, of course, its message is addressed.

There can be no doubt that there has been a very definite need for reliable information as to both sexual and general personal hygiene, coming from an authentic source, as there is always in circulation amongst the laity a great deal of misinformation in this regard.

Dr. Lowry looks upon the most critical time of a woman's life as the age of forty, and proceeds to give advice as to the care at this period of her personal appearance, exercise, the menopause, recreation; her surroundings and environment; her community work and responsibility. W. H. DONNELLY.

PRINCIPLES AND PRACTICES OF INFANT FEEDING. By JULIUS H. HESS, M.D. Illustrated. Second Revised Edition. Published by F. A. Davis Company, Philadelphia, 1919. Price, \$2.50.

The early appearance of a second edition attests to the deservedly popular character of this concise manual on Infant Feeding. The only material changes in this edition are found in the chapter on Artificial Feeding. The preparation of diets is based on the absolute relationship between the quantity of fat, protein, carbohydrate, salts and water and the body weight of the infant. As in the previous edition, the preferred method of artificial feeding is whole cow's milk dilutions with addition of carbohydrate and cereal waters. S. F.

REGIONAL ANESTHESIA. (Victor Pauchet's Technique.) By B. SHERWOOD DUNN, M.D. With 224 Figures in the text. Philadelphia, 1920. F. A. Davis Co. Price, \$2.50.

Local and regional anesthesia are widely known and used to a much greater extent in Europe than in America; this is especially so in France. For thirty years or more local anesthesia has been practised and taught by Prof. Reckus, of the Paris Faculté. The leading exponent of regional anesthesia in France today is Prof. Victor Pauchet.

Since the beginning of the war in 1914 regional anesthesia has gained many supporters in Europe and quite a few in America. In this country the greatest number of adherents has been in surgery of the head.

This volume is a résumé of the technique of Prof. Victor Pauchet combined with that of the author. The text of 294 pages is well illustrated, with good description. The armamentarium and solutions used, which are simple, are described in detail. This is followed by the technique of application to the more common major and minor surgical operations, beginning with the head and neck and ending with the extremities. The different methods of injections (interspinal, paravertebral, or by infiltration of tissues) and the anatomic points, are clearly described and well selected for the type of operation to be done.

The success of regional anesthesia in the hands of the surgeon depends, to a large extent, upon his knowledge of the technique of application. He will find it clearly described and illustrated in this volume.

S. P. BARTLEY.

THE PROCEEDINGS OF "THE CHARAKA CLUB," Volume V. Published by Paul B. Hoeber, New York, 1919. Price, \$4.00.

"Of the making of many books there is no end." Thus wrote the Preacher, the son of David, and if he disapproved the increasing literature of his day, where could he find words sufficient for the present time when the printing press turns out tons of books, pamphlets and periodicals far more rapidly than it is possible to distribute them.

Medical men contribute a fair share of this filling for library shelves; text-books, statistical papers, clinical records, etc. It is therefore a pleasure to take up Volume V of *The Proceedings of the Charaka Club*. All the chapters have been written by men high in the esteem of the medical profession, who have turned aside at spare moments from the responsibilities and worries of office and hospital to dip into history giving us a view of the thoughts and teaching of earlier days in medicine, with illustrated descriptions of early surgical instruments and their uses.

There are twelve papers in this volume of 101 pages. The first three in particular are very interesting and may be read with profit by the surgeons of today, while all the book well merits the inscription on the title page—*Post multa virtus opera laxare solet*.

J. RICHARD TAYLOR.

THE ITINERARY OF A BREAKFAST. By J. H. KELLOGG, M.D., Medical Director Battle Creek Sanitarium. Published by Funk & Wagnalls Co., New York, 1919. Price, \$1.60 net.

This small book is intended for the instruction of the public in the author's ideas of the normal physiology of digestion and the causes and effects of disturbances thereof. In a very readable way the passage of food is traced through the five "food laboratories" and the ten "gates" of the digestive tract, this description being based on the modern knowledge of the digestive processes. Then follows a description of the "house-broken colon," with a reiteration of the author's theory that, normally, defecation should occur three or four times daily, and that formed stools are an evidence of constipation. The causes of constipation are conclusively explained, as well as the physiological methods of overcoming it. The book ends with an exposition of the value and desirability of an exclusively vegetarian diet, with a special word of praise for nuts as a food. On the whole, the book is one which the laity will read with much profit. A.F.R.A.

SYMPTOMS IN THE DIAGNOSIS OF DISEASE. By HOBART AMORY HARE, M.D., B.Sc. Eighth edition, thoroughly revised. Octavo of 562 pages, illustrated, with 195 engravings and 9 plates. Phila. and New York, Lea & Febiger, 1920. Cloth, \$6.00.

This is the eighth edition of a well-known work by a well-known clinician, and needs no recommendation to command attention other than the standing of the writer and the esteem in which the former editions have been held.

The plan of the volume is to emphasize symptomatology in order that a recognition of symptoms may lead the physician to a diagnosis. Laboratory methods and technic are purposely left out, as they are so highly developed as to require special books for their presentation. Instead of considering diseases the writer considers groups of symptoms by the deductions from which a diagnosis may be made.

This is actually the method followed unconsciously by any physician in the examination of his patient and in arriving at a diagnosis.

Such books as this play a large part in the endeavor to restore the almost lost art of physical diagnosis by direct examination of the patient without recourse to laboratory methods until direct methods have been exhausted. W. H. DONNELLY.

THE HIGH ROAD TO HEALTH. By JAMES E. KELLY, with illustrations by WILLIAM CARROLL. Published by Dodd, Mead and Company, New York, 1919.

The writer of this forceful and rather pleasing treatise on personal hygiene and health is a man well qualified to write upon this subject.

No one can find fault with his list of six essentials to good health, namely; air, water, exercise, diet, sleep and perseverance. Nevertheless, as is so often the case with a man of strong convictions, he makes some rather sweeping statements which must not be taken too literally. For instance, there are cases where the drinking of unlimited water would cause great harm, as in dilatation of the stomach or nephritis with a tendency to retention of fluid within the body tissues.

Further, under the caption "Suicides' Delights" are listed sugar and salt, oatmeal, eggs, the use of milk and meat at the same meal, peas, beans, lentils, and potatoes, a rather questionable indictment.

Objection to coffee and tea, animal soup, asparagus and other articles of diet is well founded.

The exercises outlined are in great part originated by Dr. Kelly and many are of unquestionable value: one of them, the "dry swim" is both original and sensible. Again, the instruction as to how to learn to swim seems well worth trying. This consists in going into water up to the breast and then trying to swim to the bottom two yards in advance.

As the production of a vigorous and enthusiastic

athlete the book under consideration is well worth reading, and the only possible objection to publication of this kind is that it might lead some patients to attempt to carry out its precepts without a proper scientific knowledge of their own physical condition with its limitations and requirements.

W. H. DONNELLY.

POPE'S MANUAL OF NURSING PROCEDURE. By AMY ELIZABETH POPE. Formerly Instructor in the School of Nursing, Presbyterian Hospital, N. Y. Published by G. P. Putnam's Sons, New York and London, 1919. Price, \$2.00 net.

This manual is stated by the writer to have been prepared more especially to facilitate teaching, by demonstration, the practical work of nursing usually included in the junior year instruction. For this purpose it can justly be said to be admirably adapted, and the text is so arranged as to be read by the pupil nurses before the lesson, and then the instructor draws attention to points of special importance and demonstrates the lesson, after which the pupils, in turn, repeat the demonstration.

Every detail of a given method of procedure is clearly set forth and, in some instances, illustrated.

The painstaking consideration of even the smallest detail of procedure shows not only a great thoroughness of knowledge of the subject on the part of the author, but also a capacity for careful and lucid setting forth of this knowledge. W. H. DONNELLY.

A MANUAL OF FIRST AID IN ACCIDENT AND DISEASE. By EDWARD L. GAINSBURGH, M.D., Medical Officer, United States Railroad Administration (Coastwise Steamship Lines). 84 pages. New York, Stearns & Beale, 1919. Price, \$1.50.

This manual is meant by its writer to be used by laymen aboard ship, on docks or in factories, and for such a purpose it is probably suited.

No claim is made of originality in its preparation, and conciseness, with clarity of text and expression, may be said to be its main recommendations.

While possessing no apparent marked superiority over many other manuals of the same nature, it can undoubtedly be followed to some advantage by persons untrained in medical and surgical matters.

W. H. DONNELLY.

MANUAL OF PSYCHIATRY. Edited by AARON J. ROSANOFF, M.D., Clinical Director, Kings Park State Hospital, New York, Lieut.-Col., Officers' Section, M.R.C., U. S. A. Fifth Edition, revised and enlarged. Published by John Wiley & Sons, Inc., New York and London, 1920.

This work is in its fifth edition and represents an enlarged volume of De Fursac and Rosanoff's work. The general and clinical psychiatry are very well treated, and the latest theories and discoveries have been incorporated. Psychoanalysis, in its application to psychiatry, is taken up. Social service work, in reference to mental cases, is well covered, and the practical value to the psychiatrist pointed out. Modern diagnostic laboratory methods are given adequate explanation. The use of the various intelligence and association tests is fully dealt with. On the whole, the book is a valuable contribution to psychiatry and of value to the general practitioner, as well as to the specialist and student.

S. R. LEAHY.

HENRY MILLS HURD. The First Superintendent of the Johns Hopkins Hospital. By THOMAS STEPHEN CULLEN. Published by the Johns Hopkins Press, Baltimore, Md., 1920. Price, \$1.50.

This little book is an appreciation written by one of the earlier internes and later surgeons of the Johns Hopkins Hospital, of the first superintendent of that institution, who fortunately still lives, with release from responsibility, enjoying the privileges of leisure and

retirement. Such a mark of the grateful remembrance of his many years of fruitful labor in forming the methods and directing the growth of a great hospital must be very dear to him; we congratulate him upon such a privilege.

The trustees to whom Johns Hopkins entrusted the carrying out of his plans to build and administer a great hospital were gifted with unusual wisdom. They planned wisely and builded permanently and broadly because they sought and followed in working out the details of their duties the counsel of experts, and, above all, the counsel of such a man as John Shaw Billings, who appreciated the confidence shown in him and in return gave to the new institution a service of inestimable value in directing its earlier plans and securing for its work men worthy of the places opened to them.

Without knowing it, Dr. Hurd had been getting ready for the work of such an institution, and when the call came to him he made the place instead of the place making him. For twenty-two years he administered the internal affairs of the growing hospital with a wisdom and sympathetic insight that was of the highest value to the institution. He demonstrated in a typical degree what a medical superintendent should be and could do. When the increasing disabilities incident to multiplying years caused him to ask to be relieved of his work in 1911, the trustees were fully justified in inscribing upon their minutes the statement that "his high ideals, his example and his readiness at all times to give of his knowledge to others have contributed largely to the general development of hospitals throughout the country." The last chapter of this book contains just enough of the personal recollections of Dr. Hurd to wish that there were more of them. We lay the book down, grateful to Dr. Cullen for having compiled the record, but with the hope that Dr. Hurd may use some of the leisure of his present evening days in putting in shape for our delight more of his recollections of a life that has been unusually full of opportunities to touch many aspects of life and to become familiar with many men of power.

LEWIS S. PILCHER.

INBREEDING AND OUTBREEDING. Their Genetic and Sociological Significance. By EDWARD M. EAST, Ph.D., Harvard University, and DONALD F. JONES, Sc.D., Connecticut Agricultural Experiment Station. 46 Illustrations. Phila. and London, 1919. J. B. Lippincott Co. Price, \$2.50 net.

Like its predecessors, this book is so technical that the ordinary physician may be pardoned for "looking it over" only. There are not many who care to dig into the mechanisms of biology or to indulge in many mathematical flights of nine figures. The authors have written for their colleagues who have microscopic eyes and telescopic brains. These can appreciate its real value. Yet the rest of us can be glad that some men know how to write interestingly about even the most abstract subject, and that there is usually tucked away in every such book a chapter or two of understandable matters. So with this book. It really is an important book for various kinds of people—the philanthropist and priest, the scientist and the social worker, the teacher indeed, but no less the thinker; for the relations of consanguineous reproduction, no less in the human than in the animal and plant, have given rise to many questions and problems. These knots the authors have tried to untie. They describe their experiments to determine the effect and value of both in- and outbreeding, and in the concluding chapters apply their findings to various procedures of importance to biologic perfectness. For illustration, Chapter 13, on intermingling of races, stresses the great value of ethnic mixtures as shown by a comparison of the Scotch and English race with the Irish; and in the discussion on man, pp. 226-244, the human aspect of the subject and the relative values of methods of breeding are set forth plainly and fascinatingly. A good book to let alone if one does not care to be bothered, and a better book to read carefully if one wants to do some tall thinking.

A. F. E.

DISEASES OF THE NERVOUS SYSTEM. A text-book of Neurology and Psychiatry. By SMITH ELY JELLIFFE, M.D., and WILLIAM A. WHITE, M.D. Third Edition, revised, rewritten and enlarged. 1018 pages, illustrated with 470 engravings and 12 plates: W. B. Saunders Co., Phila. and New York, 1919. 8vo, \$8.00.

The third edition of what in many respects is the most valuable work we have in English dealing with diseases of the nervous system, will be welcomed by all who specialize in this class of diseases, and should be known to every general practitioner.

The authors have revised, rewritten and enlarged the present volume to over one thousand pages and have incorporated within it the many advances in neurology and psychiatry made during the recent war. Foreign authorities are quoted at length, and an adequate bibliography is introduced in footnotes.

Over one hundred pages, with many charts and illustrations, are devoted to examination methods; the neurology of metabolism is adequately treated, the diseases of the ductless glands are given nearly ninety pages, and such new matter incorporated as seems worthy of acceptance, and throughout the volume the space allotted to each phase of neurology and psychiatry seems well proportioned and adequate.

In considering the psychoses, the authors have not been content with describing the symptoms of the various forms of mental disorders, but have endeavored to interpret them in terms of the reaction of the individual to the stress and the conflicts of his environments.

On the whole, the work is most satisfactory.

THE PROBLEM OF THE NERVOUS CHILD. By ELIDA EVANS. With an introduction by Dr. C. G. Jung, of Zurich. Published by Dodd, Mead & Co., New York, 1920.

This is really psychoanalysis applied to the child, and the writer's teacher, Dr. C. G. Jung, of Zurich, in his introduction to the book remarks that there were very few works on education which concern themselves as does this one with the child's most intimate problems.

The text shows evidence of thorough knowledge of the subject and is the result of wide experience in this fascinating field of medicine.

While especially adapted to the needs of the neurologist and the educator of children, nevertheless it may be read with great benefit both by the pediatricist and the general practitioner.

W. H. DONNELLY.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D., San Francisco, California. Sixth Edition. 12mo, 424 pages. Phila. and London: W. B. Saunders Co., 1920. Cloth, \$3.00 net.

This standard work is now in its sixth edition, its first edition appearing nearly thirty years ago.

It is delightfully written; facts and fads are spoken of in a straightforward way. Anyone interested in the treatment of impotence will be repaid by the reading or rereading of Dr. Vecki's book.

STURDIVANT READ.

THE TREATMENT OF WOUNDS OF LUNG AND PLEURA. By Professor EUGENIO MORELLI, translated from the Italian by LINCOLN DAVIS and FREDERICK C. IRVING. Octavo of 214 pages, illustrated. W. M. Leonard Publisher, Boston, 1920.

The translators of this volume were attached to Field Hospital No. 79, 11th Corps of the Italian Army, directed by Eugenio Morelli. This hospital was devoted exclusively to the treatment of wounds of the lung and pleura.

The translators are enthusiastic supporters of Morelli's novel methods. Technic is simple, painless and results were convincing.

There is an introduction by Professor Carlo Forlanini, in which he promulgates his method of artificial pneumo-

thorax, proposed by him in 1882 for the treatment of pulmonary tuberculosis. Morelli conceived the idea of applying the principles laid down by Forlanini to the treatment of war wounds in the lung and pleura. Morelli formulated his proposition several years before the war, and he was the first when war offered the opportunity to make systematic application of these principles enunciated in 1910.

In general terms, Morelli's ingenious and practical devices combine graduated aspiration and lung compression with irrigation of the chest cavity. Most surgeons are opposed to irrigation in the chest cavity. It would seem, however, that good results may be looked for by the substitution of pneumothorax for hemothorax. Morelli describes his apparatus, a modification of the instrument of Forlanini, for the accomplishment of this. In the treatment of empyema he has made a step toward the solution of this problem by means of his rubber balloons surrounding drainage tubes; to this tube he attaches a specially devised apparatus, establishing negative pressure and compelling the lung to dilate as much as thickened pleura and adhesions will permit. This suction is of the greatest value in re-establishing function. He institutes lavage, which, however, we cannot support.

Acceptance of Morelli's methods involves no surrender of surgical principles. Debridement and closure of the wound by suture should be done. Morelli has devised a rubber bag for the closure of open pneumothorax when closure is otherwise impossible. Its use at the front would doubtless have saved many lives.

In civil practice the use of Morelli's methods will make for an advance in the treatment of hemothorax and empyema.

About one-third of the book is devoted to case reports upon which the premises of this text are based. His desire to aid the cause is commendable. This volume presents his personal experiences in the field and presents no bibliographic references. It is not a complete treatise but rather a résumé of articles previously written.

ROYALE H. FOWLER.

SIMPLIFIED INFANT FEEDING—WITH EIGHTY ILLUSTRATIVE CASES. By ROGER H. DENNETT, B.S., M.D.. Octavo of 385 pages, 14 illustrations. Second Edition, revised and enlarged. Published by J. B. Lippincott Company, Philadelphia, Pa., 1920. Cloth, \$5.00.

This is the second edition of the author's book on infant feeding in which he advocates the use of simple boiled milk dilutions with the addition of sufficient sugar to make up the required amount of calories. The points in the text are illustrated and emphasized in a very graphic and telling manner by case reports. The book is based upon the active experience of the author with boiled milk. He has fed many hundreds of infants of all ages and conditions of malnutrition and has fed them boiled milk mixtures throughout the bottle period, in many of them from birth. He has had the opportunity of observing hundreds of his private patients throughout early childhood and found that nutritional disturbances are rare among these patients while formerly they were far more frequently seen when raw milk mixtures were used as a routine. The author is convinced beyond the question of a doubt that boiled milk does not cause rickets, scurvy, malnutrition, anemia or poor musculature, if orange juice is given once or several times a day. He feels that boiled milk is more digestible than unboiled milk. He uses simple milk dilutions, usually beginning with one-third milk and gradually increasing up to one-half milk, two-thirds milk or three-quarters milk. The carbohydrate used is either cane or milk sugar, sometimes malt soup mixtures.

The book is written in a very readable style, simple enough for the average general practitioner to understand without wading through a lot of theory and mathematics. One of the strongest features of the book is the minute and detailed description of every

operation necessary in the preparation of the diet, as, for instance, the boiling of milk with or without gruel. While the use of boiled milk must not be accepted as a panacea for all feeding troubles, still the general practitioner will find the book a great help and aid in the solution of his feeding problems.

Additional features of this edition are the chapters on Acidosis, Dry Milk, Salts of Milk, and the Hyper-tonic Child.

M. B. GORDON.

A TEXT-BOOK OF DERMATOLOGY. By J. DARIER. Authorized translation from the Second French Edition, Edited with Notes by S. POLLITZER. 769 pages, 204 engravings, 4 colored plates. Phila. and New York, Lea & Febiger, 1920. Octavo. Cloth, \$8.50.

The original second edition of Darier's Text-book of Dermatology is, without doubt, the best French treatise on skin diseases, for the author is the brilliant exponent of the French (Saint Louis) School of Dermatology. The American dermatologists to whom the French edition was not available, are to be congratulated, because Dr. Pollitzer, the editor, from his long and intimate friendship with the author, and his sympathetic accord with the French views, makes the English edition so much like the original, that one misses nothing in the translation.

The book is divided into two sections and an appendix. The first section is entitled the "Morphology of the Dermatoses," the second the "Nosology of the Dermatoses." The first discusses the eruptive skin lesions and the non-eruptive cutaneous changes. The second division reviews the pathological entities. The appendix consists of therapeutic notes. The editor has added his views in many instances, especially in the treatment of syphilis.

The grouping of diseases according to their pathological background is rather confusing to one who is accustomed to the usual arrangement and classification of our modern text-books. The great value of the work lies in Darier's power of concise description; it is, as the editor states in his preface, "a clear-cut, cameo description;" the value of these descriptions has not been lost in the translation.

This work is a valuable addition to American dermatological text-books, and will be especially appreciated by teachers and students of dermatology. W.

Deaths

FRANK BEEBE, M.D., Johnstown, died July 9, 1920.

WILLIAM M. HANDLEMAN, M.D., New York City, died August 9, 1920.

EMIL HEUEL, M.D., New York City, died August 11, 1920.

CHRISTIAN F. J. LAASE, M.D., New York City, died August 21, 1920.

WILLIAM C. LEWIN, M.D., Buffalo, died August 1, 1920.

THOMAS H. MCKEE, M.D., Buffalo, died August 1, 1920.

HENRY E. MERENESS, M.D., Albany, died August 4, 1920.

LYNN R. PALMER, M.D., Old Forge, died July 23, 1920.

CHARLES W. RADWAY, M.D., Mexico, died August 2, 1920.

KARL J. SEVERANCE, M.D., Keeseville, died July 27, 1920.

FREDERICK A. STRASENBURGH, M.D., Avon, died August 2, 1920.

EDWARD WAGNER, M.D., New York City, died August 14, 1920.

CLAUDE R. WOODS, M.D., Delhi, died July 6, 1920.

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EDITORIAL DEPARTMENT

THE TREND OF MEDICAL LEGISLATION IN THE STATE OF NEW YORK.

THE medical profession for centuries has had to protect itself against idle beliefs and painful delusions of the populace about it. In the past, these insidious influences that delayed the progress of man in his struggle against disease and untimely death have been conquered by the power of scientific truth—but as one picturesque and fantastic delusion has been routed, another has been welcomed and embraced. How foolish was the general belief in England among the people, as late as the time of Queen Anne, that the touch of Royalty would cure scrofula—yet this folly persisted despite its patent absurdity. The weapon ointment fallacy had no mean following among all classes of English society—its advocates seriously maintained that a preparation known as unguentum armarium would heal wounds upon its being applied to the weapon which caused the wound. Sympathetic powders were the vogue for some time and accomplished, it was claimed, marvelous cures of wounds by the simple application of the powder to the blood-stained garment which had previously been in contact with the wound. America has had its kindred delusions, possibly none more ardently propagated among the credulous than that devised by one Perkins. He was the originator of a simple device called a tractor, consisting of a strip of brass and one of iron which possessed therapeutic qualities that required a large volume of prose adequately to describe and the poet's muse picturesquely to praise. The tractors cost a shilling and sold for a guinea and cured every known ill. Though thousands of these Perkins tractors were sold and used, to-day you would have to search among the curios in a museum to find one.

Thus the royal touch, unguentum armarium, sympathetic powders, Perkins tractors and various other false panaceas for human ills have had their day and held their sway among the ignorant and superstitious, only to meet an early death and find a resting place at last in the mortuary of dusty archives of history. Their heirs, however, are still with us and trace their lineage back to the same old progenitors—ignorance and superstition. We have the chiropractors who, with elaborate offices, paraphernalia and trappings, claim to cure all disease through the gentle pressure of the thumb upon the sufferer's vertebra. Their claims are based upon a thoroughly false and unscientific hypothesis. They proclaim and widely advertise their marvelous "cures" as evidence of the truth of their claims and have actually created in many quarters a definite, public sentiment supporting their propaganda. Many of these chiropractors decorate their walls with spurious diplomas, dishonor the worthy title of doctor and, in their lust for money, prostitute the healing art. We also have the cults that scorn the very existence of disease and assert that it is but a baseless fear in the mind of spiritually deficient man. To the latter the ravages of epidemics are but the evidence of a lack of harmony between the soul of the masses and their Creator.

The medical profession knows how false, hopeless, and in many cases harmful, these present-day delusions are and believe they will run their course and in due time pass on and be forgotten, as have their predecessors. Do you realize, however, that meanwhile the votaries of this false science have developed a formidable organization for proselyting purposes and that thereby they have created a demand for the "goods" which their healers have to sell? Do you realize that the chiropractors have a national organization

with close affiliation with similar State organizations throughout the Union and that, by a publicity campaign of attractive phrasing, artistically printed and illustrated, they are endeavoring to create, and in part have succeeded in arousing a prejudice against the medical profession and its scientific truths? Do you realize that in the main the false claims have been allowed to pass unchallenged before the people?

Do you realize that as a result of systematic publicity and unscrupulous agitation the exponents of some of these false beliefs have in many States of the Union received official sanction and have been licensed to undermine the public health for their own private, sordid gain?

In the Legislature of this State, this year, the chiropractors procured the passage of a bill to legalize their practice, to grant official recognition and license to their practitioners, to bestow upon them the time-honored title of doctor without the requirement of previous medical education or training. The courts of this State have time and again declared that chiropractors who are not registered physicians conduct their practice in violation of the law of this State. Nevertheless, this chiropractic bill provided, as a qualification for receiving license from the State, that the applicant should have been continuously for a year prior to the passage of the bill a chiropractic practitioner in flagrant violation of the existing criminal statutes of the State. The Governor refused to give his official sanction to such a nefarious scheme and vetoed the bill. The chiropractor's bill is typical of that kind of medical legislation which is made possible by popularizing, through insidious and clever publicity, scientifically false claims. It is easy to conceive that the noise and agitation of a small minority of selfish men, which is created by systematically organized effort and the liberal expenditure of money in the spreading of lying propaganda, can easily be mistaken by the legislators for popular opinion.

The progress of this bill in the Legislature is primarily due to the public apathy toward medical legislation and the militant aggressiveness of selfish interests that prey upon the masses' ignorance of medical truths. The public having read the widely advertised claims of the chiropractors and the promised relief from disease and pain by simple "adjustments" and hearing nothing to the contrary from the medical profession, assume the truth of the claims and embrace the treatment that promises such prompt and sure success. The defeat of this bill through the Governor's veto at the eleventh hour by the protests of the medical profession is a poor substitute for a campaign of public education on this subject that would have made the passage of the bill impossible.

In this country we recognize a primary duty on the part of the citizen to the State and to his fellowman. The medical profession discharges this twofold duty in the practice of the healing art with much self-sacrifice and devotion and is

entitled to the respect of the people at large and to recognition by the State in the councils of government. In political affairs the profession does not exercise power commensurate with its service to the State. Until this condition is changed, medical opinion will have little effect upon the trend of medical legislation in this State. The medical profession is unfamiliar with the window-dressing of plain truths and understands little of the art of publicity and so shrinks from it almost timidly. Publicity generates the force and power behind and in support of legislative activity. Without publicity in a democratic form of government, popular sentiment cannot be aroused and, therefore, will not find expression in legislative action. The false beliefs and painful delusions of the present day that defy the truths of medical science will not find support and entrenchment in legislative action if they are squarely met in the forum of popular discussion. It is not sufficient for the medical profession to promote discussion of its medical truths in scientific journals, valuable as they may be to the practising physician; the great mass of the public must be reached through the medium of the lay press and the public forum and a true sentiment, a public support, respect and love for medical science created. Public health education inspires co-operation of the people that helps to reduce and control contagion and so is an important part of the profession's duty. The profession occupies a fiduciary and trust relation to the public in that in its hands is placed the responsibility for the most cherished of all possessions—life. A fiduciary must not only administer his trust with fidelity but must render to his *cestui* an accounting of his stewardship. The profession has discharged its duty to the public in its conservation and preservation of human life, but has omitted to give to the public the accounting to which it is entitled. Let the profession be less sensitive to glorifying its achievements and let it render an accounting of its accomplishments that the world may know how faithfully and devotedly it has discharged its duty. Having gained public support, the medical profession's voice in legislative halls will be heard and heeded.

We have considered that type of medical legislation which is enacted in response to selfish propaganda or misguided public opinion resulting in legalizing unscientific treatment of disease by the unskilled and untrained.

There is another phase of medical legislation that is distinct in character and origin from the type that we have already discussed. It affects, primarily, the economic status of the practising physician and from the standpoint of the personal welfare of the physician, is of great importance.

The development of our law has followed in many ways the development of our industrial growth. It early developed that the individual worker was at a great disadvantage in the recov-

ery of damages for injuries sustained by him in his occupation. It was deemed wise, in the interests of fairness, to distribute the financial burden of industrial accidents and to give to the worker a simple and inexpensive means of procuring compensation for injuries which he sustained in his work. In attempting this it was necessary to deal with industry as a whole on one side and the workers as a unit on the other. To accomplish these ends the Workmen's Compensation Law was passed in 1913 and later the principles underlying it enacted in this State by constitutional amendment in 1914.

This measure was primarily intended to provide compensation to injured workmen for industrial accidents and as such was a praiseworthy program designed to correct injustice, and to distribute the loss occasioned by such injuries over industry in general.

This act requires that the employer furnish the employee with medical services in case of injury. The injured workman must accept such medical attention from the physician chosen by the employer, thereby destroying the right of the employee to choose his own physician. The employer's liabilities under the act are in the main shifted to insurance carriers with whom the employer insures, and with the insurers the problem of medical care for the injured workman is one largely of cold statistics and finance. The insurance carrier undertakes under his policy of insurance to provide the medical attendance for the injured workman. Under this system there has grown up a contract system of medicine in these compensation cases. These large and powerful financial bodies dealing directly with the individual physician are in a position in large measure to impose their terms upon him.

A further feature of this law restricts the physician in his charges and places upon a lay commission the power to fix such physician's fees; under this system it is readily seen that the physician furnishes his professional services and has no voice in determining their value. This condition has been the subject of grievous complaint by the medical profession.

In considering this unfortunate and disastrous trend of legislation affecting the medical profession in this State, it must be borne in mind that these obnoxious features have nothing whatever to do with the merits of workmen's compensation, and are not essential to its practical and efficient operation. They are but by-products of a legislative program that in other respects is beneficent and progressive. The effect upon the profession of the legislative by-product under this act is revolutionary, and unless the tendency to write into so-called welfare legislation features which create a most dangerous by-product in the form of control of the medical profession is overcome, there will result a total economic subjugation of the profession which will most

seriously impair its efficiency and destroy its independence.

Discussion of this situation in medical societies and before medical men will not be sufficient to prevent further extension of the policy of control of the economic destiny of the profession in future legislation. Professional efficiency and standards cannot be maintained in the medical profession by placing it under the wage plan. The physician is the servant not of his employer or of his patient, but the servant of the highest spiritual powers that regulate human life.

The compulsory health insurance scheme which has been before the Legislatures of this and other States in recent sessions is represented by its sponsors as an ideal plan for furnishing to the wage earner medical service which they claim he is, under present conditions, unable to obtain or pay for. It is primarily an economic scheme for the distribution of the cost of sickness, but for the medical profession contains a most dangerous by-product.

This whole scheme for regulation of the cost of sickness of the wage earner and its economic distribution is built upon the assumption that the physician can be drafted into the ranks of its service and *made* to give that high character of personal sacrifice for humanity that has its main-spring only in *voluntary* effort—he cannot be *compelled* and he will not be compelled. The idealism of the physician that prompts him to succor the suffering and help the helpless cannot be meshed through mechanical manipulation by statutes into a purely economic industrial mechanism. Idealism is spiritual not mechanical—voluntary not statutory. So let those proceeding with their plans for *compulsory* health insurance legislation take notice!

Again in this most recent legislative program conceived by doctrinaires, fomented by propagandists and adopted by some ambitious politicians the by-products of medical oppression and control appear more dangerous than any resulting from previous efforts to produce synthetically a legislative panacea that will conquer disease and produce votes.

The majority of legislative activities affecting the medical profession and to which they are opposed are made possible by the people's ignorance of the essential truths of medical science and of the work being done by the profession. Bring them to a realization of these things and the voice of the profession in legislative halls in purely medical matters will be as potent and acceptable as it is in the homes of those distressed by sickness. The advice and counsel you are paid to give the sick is followed with faith and confidence in your honesty and ability. Why should it not be so in the halls where laws are made? Awaken that confidence in your legislative wisdom on medical matters that now is reposed in your medical skill and your voice will be heard and heeded. GEORGE W. WHITESIDE.

THE STATE DEPARTMENT OF HEALTH AND ITS EXPERIMENT.

THE Diagnostic Clinic of the State Department of Health is the one concrete experiment which has thus far resulted from the agitation to which the practice of medicine has been subjected during the past few years.

It will be unfortunate if the clinic held in Goshen, Orange Co., in August of this year, goes unheralded except through the public press, because the decision as to whether or not these State Diagnostic Clinics are worth anything to the public health will ultimately be made by the medical profession, and, especially, by the Medical Society of the State of New York.

It is lamentable that such full report of the Goshen Clinic should have been procured by the daily press in advance of publication in the *NEW YORK STATE JOURNAL OF MEDICINE*, the legitimate organ for the dissemination of medical news in the State.

We realize that it is practically impossible to exclude newspaper reporters from any public function, but we cannot refrain from pointing to the fact that the gentlemen of the press are gentlemen, and that it is our own experience that suggestions that the public interests would best be served by conservative handling of medical topics is always accepted in the spirit with which it is made.

In the case of the Goshen Clinic someone failed to advise with the representatives of the Press, and this placed the State Department of Health in the unenviable position of carrying propaganda to an audience which is insufficiently informed to reach any valuable conclusion, and the, if possible, more unenviable one of presenting as an advance in medicine what the Director of the Clinic himself described as an experiment.

We feel so absolutely certain that the officials of the State Department of Health are personally and officially embarrassed by this misfortune, which is a mere sin of omission, that we extend to them our unsolicited sympathy.

We understand that a "movie" of the Clinic was taken. If this is so it is to be hoped that no lack of supervision will enable its release to any place of public entertainment.

Data for a critical survey of the Goshen Clinic are not yet available to us and consideration of the real values is necessarily postponed.

HENRY LYLE WINTER, M.D.

"THE VOLUNTARY HOSPITAL."

IN England the "voluntary hospital" corresponds to our "private hospital," an institution chiefly if not entirely supported by voluntary contributions on the part of the citizens of the community. There, as here, these hospitals

care for a large percentage of the indigent sick, they have among the most prominent members of the medical profession on their attending staffs, and they are pre-eminent in the efficient care of the sick and in the advancement of medical science by clinical and laboratory research and by their important rôle in medical pedagogy. There, as here, the rapid rise in the cost of living and the increasing need for modern additions to equipment and procedure during recent years, have been a severe strain on the existing endowment funds and the usual annual incomes, with an almost invariable increase in the amount of their floating debt. There, as here, every effort is being made by every institution of this kind to correspondingly increase income from customary sources to meet this change in conditions, with widely varying degrees of success.

In England this state of affairs has resulted in the recent introduction of a bill in Parliament for the purpose of securing municipal aid in the support of these voluntary hospitals. At the present time a rather heated discussion appears in the English press relative to this proposed measure, well worthy of our attention. The city ratepayer opposes the bill on the ground of unequal taxation, claiming that the municipality should not bear the burden of the care of the sick poor from all parts of the country, particularly in the voluntary hospitals for special diseases—gynecological, obstetrical, orthopedic, ophthalmological, etc.—to which patients come from all parts, even from foreign countries. The taxpayer claims this burden should fall on the "State," corresponding in this case to our Federal treasury. The medical profession, on the other hand, opposes such "State" support, as it will mean "State" control and will be an entering wedge for "State" medicine, a condition as much feared and opposed by the profession in England as health insurance is feared and opposed by the profession not only of the State of New York but of every State in the Union.

While on the whole, our institutions have succeeded in a larger measure in meeting the new economic conditions, this is not universally the case, and there were indications last winter that the Legislature of the State of New York was considering ways in which relief might be afforded. The physician has a vital interest in the "private hospital." Economically its position is in jeopardy. While a lay board usually undertakes the financial responsibility and administration, it is nevertheless the physician's duty to determine if the institution can continue to be supported in the manner, as previously, to the satisfaction of the people at large. If it becomes evident that this is not possible, it is his duty to join with these financial administrators in proposing safe and sane legislation to secure the same end. If he is lethargic and satisfied that these matters will take care of themselves, he

must not be surprised if such legislation is proposed by the people, coupled with political provisions which may lower the standards and reduce the usefulness of the hospital with which he is connected. In this case the physician would appear in the weak rôle of opposing proposed legislation, instead of as the original advocate of sound law for the good of the people and for the elevation of the standards of his profession.

PUBLICITY.

THE modern tendency of the progressive American citizen is to know as much as possible about the subject with which he is dealing. The time has passed when the physician, after seeing his patient, can satisfy the anxious husband with the statement: "Your wife is not seriously indisposed; she will be quite all right in a few days. I have left instructions with her sister, and I will be in again in the morning." The lawyer who finds his case has medical aspects which he does not understand, finds a physician who will explain it to him in plain language, and with plain language he goes before judge and jury.

Progress in preventive medicine is awakening public interest in health, and people wish to know what they can about a subject which concerns them and consequently interests them. By far the larger part of our medical publicity in the lay press is bad, because it is written for an ulterior purpose and not solely for enlightening the people on medical affairs and medical progress. Proper medical publicity and consequent education of the people is a far more potent weapon in fighting the menace of quacks and cults than any restrictive legislation can ever hope to be.

The following short article from the *London Times* of September 22, 1920, is a striking example of disinterested plain language educational matter. Would it not be desirable for the profession of the Empire State to create means for the preparation of a campaign of proper medical publicity, for the benefit of the people, in the interest of our medical institutions, and for the credit of the profession.

THE CRIPPLED CHILD

NEW TUBERCULOSIS METHODS

(By Our Medical Correspondent.)

There is no more sorrowful sight in our modern life than the child afflicted with tuberculosis. The twisted back, the limbs swollen and contorted, the drooping head furnish so eloquent an appeal for help that the hardest heart may not resist it.

Any real progress in the treatment of such conditions deserves the widest acknowledgment. This progress is to-day a reality, as may be seen

by anyone instructed in the treatment of surgical tuberculosis who visits the Lord Mayor Treloar's Home at Alton. The medical officer of this institution has devoted his life to the work. The upshot of that work may necessitate our abandoning the habit of speaking of "surgical" tuberculosis at all. For the truth would seem to be that the less surgery we employ the better the patient's chance of recovery.

It used to be urged that the surgeon should open up tubercular disease areas in bones and joints and elsewhere. The idea was that by this means each focus of infection was dealt with and the general mass of infection was lowered. In consequence we had a very great development of what was called the surgery of tuberculosis, and indeed the name "surgical tuberculosis" was coined to differentiate these conditions from pulmonary tuberculosis or "consumption."

But a careful study, and, what is even more important, a careful following up of the cases after discharge from the home, have led to the idea that very often surgery does no good at all and that it may easily do a great deal of harm. The truth is that tissues which have been attacked by the tubercle bacillus become very weak and lose their resistance to such an extent that if any other germs reach them they fall an immediate and easy victim, and so a new infection is added to the old one. Surgery is apt to open the way for the entry of new germs. Wounds are made, they become infected, fever supervenes, and the child develops the "hectic" appearance which is associated not with tubercle itself but with a new infection superimposed on tubercle.

At Alton the methods of surgery have been largely dispensed with. Accumulations of fluid are removed, it is true, but only by aspiration—i. e., by a fine hollow needle. Thus there are no wounds to become infected and the deadly "secondary infection" is avoided. The tubercle bacillus is thus separated from its most dangerous "allies." It is then dealt with by making the human soil in which it flourishes as unsuitable as possible for its growth. Vaccines are not used as they have been found of little value. The child itself is the study. By rest, by the use of very clever and very original apparatus relieving the weak place from strain, by sunlight, by good food (but not "stuffing"), and finally, when the patient is better, by exercise and the stimulation of country surroundings the battle is won. You really play up the child against the germ, and given a decent chance the child wins. This is neither surgery nor bacteriology (though both may be employed as helps now and again); it is medicine in the best sense of that much-abused word.

The work is revolutionary in its character. It owes much to the devotion with which it is being carried on and to the imagination which obtained the requisite site in Hampshire for the benefit of these suffering children.

LOCAL IMPORTANCE OF THE CAMPAIGN.

IN the approaching election it is vital not to forget the large number of members of the Legislature to be elected next month. In the interest of sound laws and good government it is essential to secure those candidates whose records and qualifications make their election desirable, irrespective of party affiliations; and to defeat those who in the past have acted contrary to the best interests of all concerned. Every physician in the State of New York has much at stake in the effort to uphold professional standards in these days of active medical legislation, and it is imperative that he should do his duty in this regard. Your officers of the State Society make every effort in the interest of sound principles and demand that you do your duty in the proper selection of the men to whom they must appeal in your name for what is best for the people.

Correspondence

SYRACUSE, N. Y., September 14, 1920.

To the Editor,

NEW YORK STATE JOURNAL OF MEDICINE.

DEAR SIR: In the NEW YORK STATE JOURNAL for July, 1920 (Volume 20, No. 7), there appears "A Comparative Study of the Diagnosis of Specimens from Cases of Typhoid Fever, Tuberculosis and Diphtheria from the Different Laboratories of New York State," by Finley and Lawrence of the New York State Public Health Laboratory.

It would seem to me that the method for study was not well chosen, and that it, therefore, led to certain conclusions not justified by the facts. In the matter of typhoid diagnosis, the article states that of the four specimens submitted, No. 1 was weakly positive, No. 2 a weak negative, No. 3 a strong positive, and No. 4 negative. The conclusion was: "A glance at the chart shows a most satisfactory uniformity in reports." Perhaps a glance would; but a careful analysis does not. The authors evidently reached this conclusion by analyzing the results specimen by specimen; overlooking the fact that a laboratory might be correct on one specimen and in error on one or two others. It would seem to me that this was in the nature of an examination for which four fair questions covering the field to be investigated had been chosen, and that the information desired was whether the particular laboratory could correctly differentiate between a negative and a positive in varying degrees. We should be interested, then, not in how many laboratories were correct on any particular specimen but how many made a reasonably correct differentiation of the specimens submitted. Analyzed on

this basis, we find that of the thirty-two laboratories but fifteen were reasonably correct in their findings on the four specimens. By "reasonably correct," I mean that on the weakly positive they got at least a positive in the low dilution; on the weakly negative no more than a partial or a low dilution reaction; and on the strong positive and clear negative uniformly positive and negative results. For example: Laboratory No. 3 would, in my mind, be considered as reasonably correct, getting positive in all dilutions with specimen No. 1, the weakly positive, and partial reactions in all dilutions in specimen No. 2, the weakly negative, and that No. 9 is also reasonably correct, getting all positive in No. 1 and all negative in No. 2. This analysis gives 47 per cent of the laboratories as reasonably correct in their analyses of the typhoid specimens submitted. This is hardly, in my mind, "A most satisfactory uniformity," although it is a fairly satisfactory condition open to considerable improvement.

When we consider the study of the diphtheria specimens, however, we find results in my mind quite unsatisfactory. In this test, in which thirty laboratories participated, ten specimens were said to have been divided as follows. Specimens A, B and E showed morphologically typical *B. diphtheriæ*. Specimens C, D and F showed morphologically less typical *B. diphtheriæ*. Specimens G, H, I and J contained no *B. diphtheriæ*. Again, I would not analyze these laboratory results on the basis of the number who were correct on any particular specimen. I would consider each laboratory trying an examination and to be marked according to the correctness of its results on all the specimens submitted. If that was not the original intention, it would seem to me to be the logical plan. Analyzed on this basis, it would seem to me that a well-conducted laboratory should report positive on A, B and E, containing morphologically typical *B. diphtheriæ*. No good public health laboratory should fail to recognize the typical except through some unfortunate accident. Furthermore, one might expect recognition of the *B. diphtheriæ* in Specimens C, D and F, said to be morphologically less typical, if by that is meant that they did contain the *B. diphtheriæ* morphologically typical but less typical than in the first named three. Lastly, none should commit the error of finding *B. diphtheriæ* in Specimens G, H, I and J, said to contain none. Analyzed on this basis, we find that but four laboratories handed in correct results—13 per cent—and that twenty-eight were in error, seventeen failing to recognize typical *B. diphtheriæ* or reporting positive when none were present. The nine additional ones classed by me as in error merely failed to recognize the less typical.

I understand the possibility of error in differentiating the less typical *B. diphtheriæ* from the so-called pseudo forms, etc., so I rightfully assume that these specimens sent to the laboratories for the purpose of ascertaining the reasonable correctness of their work were selected with an eye to fairness, not with the idea of confusing or leading them into error. If they were not so selected, they should have been, and in all fairness the test should be repeated along such constructive lines, for the results reported were anything but satisfactory and breed anything but confidence.

The results obtained with tuberculosis material were very good and are to be commended.

Yours very truly,

WILLIAM A. GROAR, M.D.

Original Articles

THE RADICAL ABDOMINAL OPERATION FOR CANCER OF THE CERVIX.*

By REUBEN PETERSON, M.D., F.A.C.S.,
ANN ARBOR, MICH.

I HAVE taken the liberty of changing the title of my paper so that it may be limited to the consideration of the radical abdominal operation for cancer of the cervix. This is done not because I have had any reason to change my opinion regarding the desirability of performing the radical abdominal operation for carcinoma of the fundus, but because the primary and end results of the radical abdominal operation for cancer of the cervix and fundus differ so widely. The radical abdominal operation for carcinoma of the fundus is accompanied by a relatively low primary mortality with excellent end results, while the same operation for carcinoma of the cervix will, in my opinion, for reasons to be set forth later, always be attended by a high primary mortality with ever improving end results as the cases come earlier to operation. Moreover, I believe that all forms of treatment of uterine cancer should be similarly defined as to the location of the disease, if we are to be in a position to discuss the value of a given treatment so far as end results are concerned.

Owing to interruption of operative work by war activities I have very few cases to add to the report of the results of the radical abdominal operation for cancer of the cervix made at the Washington meeting of the American Gynecological Society in 1916. In Michigan, at least, there is no evidence that cancer of the cervix is being recognized earlier, or if diagnosticated is being referred to the surgeon earlier than was the case fifteen years ago. Consequently, although I see a fairly large number of cases yearly most of them are too far advanced to even consider a radical operation. The operability of cases seen from the radical operative standpoint is from 15 to 20 per cent, a percentage which has not increased for the past ten years.

In the brief time at my disposal an exhaustive discussion of the subject under consideration is out of the question. Therefore, in addition to giving my results in 60 cases of carcinoma of the cervix treated by the radical abdominal operation I will confine my remarks to certain all important phases of the subject.

Primary Mortality and End Results. My experience with the radical abdominal operation for cancer of the cervix dates from 1902. During these eighteen years I have seen in the University and private clinics 380 cases of cancer of the cervix and have judged 60 favorable for the radical abdominal operation. There have been

16 primary deaths in the 60 cases or a mortality of 26.6 per cent.

Taken alone such a high mortality would tend to discourage any operator and tempt him to abandon the operation. He is only justified in so doing, however, if after repeated conscientious efforts his high mortality is attended by corresponding poor end results. As I have pointed out in previous papers, it is essential in arriving at any just conclusions regarding the value of the radical abdominal operation for cancer of the cervix to consider the primary and end results together. With very few exceptions what is commonly called a recurrence after the radical operation for cancer of the cervix comes within five years. I have had one case of recurrence six years after operation for cancer of the cervix and one rather remarkable case where there was a recurrence seven years after the radical abdominal operation for cancer of the fundus. Ries reports a recurrence in the inguinal glands nine years after a radical operation for cancer of the cervix. Other cases of recurrence after five years have been reported but they are rare. Therefore, we are justified in assuming that if a patient shows no signs of recurrence for five years she may be considered cured.

Merely brief consideration of primary mortality and end results will show how closely dependent they are upon each other. If an operator for fear of primary deaths fails to be thorough in his radical operations, if, in other words, he dodges the issue and does not really perform the radical operation his primary mortality may be quite gratifying, but very few of his operated cancer of the cervix patients will live beyond the five-year period. Again if he sticks to the principles of the radical operation to the bitter end, while his primary mortality may be high, his ultimate results may be exceedingly gratifying.

End results to be of any value must be figured in the same way. Wertheim's rules are simple, sensible and quite frequently followed. Under these rules the percentage of permanent cure of all patients operated upon by the radical abdominal operation is obtained by dividing the number of patients alive and well and free from recurrence after five years by the total number of operations performed five or more years minus those patients lost track of and those dying of intercurrent disease. The percentage of permanent cure of those surviving the radical operation is obtained by dividing the number of patients alive and well and free from recurrence five years or more after the operation by the total number of patients operated upon five years or more minus those dying from the operation, those lost track of and those dying of intercurrent disease.

Statistics are of no value unless they are accurate and based upon reliable data. It requires a great deal of time, labor and patience to keep

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

track of post-operative patients and to determine accurately whether they are free from a certain disease. But the satisfaction to be derived from tracing the patients and hearing from them and their physicians is worth the labor. I am pleased to report that all the patients surviving the 60 radical operations for cancer of the cervix have been traced so that an accurate report of end results can be made in my own cases.

So far as end results are concerned we are only interested in the cases which were operated upon five years or more ago. There were 47 such cases (Table 4) with 14 primary deaths, 3 dying of intercurrent disease and 18 patients remaining alive and free from recurrence five and more years after operation. According to Wertheim's formula (Table 4) the percentage of permanent cure of all patients operated upon is shown to be 40.9 while in Table 5 the percentage of permanent cure of patients surviving the operation is shown to be 60.

I realize that sixty cases is a small number in comparison with the material of some operators. Still, the number is large enough to enable one to draw certain conclusions. The primary mortality (26.6%) is high, but the percentage of patients living and well five years and more after operation (40.9%) is gratifyingly good. So also is the percentage of permanent cures (60%) of those who survived the operation. After considerable labor I have been able to collect from the literature 1,911 cases¹ of the radical abdominal operation for carcinoma of the cervix where the above percentages have been accurately worked out (Table 6). A comparison with the percentages in my own cases is very interesting and absolutely proves what has been stated before regarding primary mortality and end results. It will be seen that while the primary mortality in the 1,191 cases was considerably lower than in the 60 cases (18.4% as compared with 26.6%) my percentage of permanent cures of all patients operated upon five or more years was higher (40.9% as compared with 39.4%) than in the 1,191 cases. There is only one conclusion, so far as I can see, to be drawn from a comparison of these figures. More patients were lost primarily in the personal series because the endeavor was made in every case to carry out the principles of the radical abdominal operation. Where mistakes had been made as to the extent of the disease or where poor judgment had been exercised as to the vitality of the patient prior to operation, primary death was a result, because an extensive operation was performed in each case. As an additional proof may be cited the causes of death set forth in Table 7, where shock, either alone or accompanied by hemorrhage, accounted for ten of the sixteen primary deaths. Yet, in spite of the handicap of a large primary mortality, in the

long run, because the cancerous disease was removed through the extensive operative procedure, more permanent cures resulted, that is, proportionately more lives were saved than where the primary mortality was lower, as was the case in the large series of collected cases. Obviously, it does not follow that a high primary mortality will be followed by good end results, or that a low primary mortality will show poor end results. As shown by the reports of quite a number of operators, either because of the skill of the surgeon, the good judgment shown in the selection of cases suitable for the radical operation, or possibly because of the nature of his material, a low primary mortality will be followed by excellent end results.

Selection of Cases for the Radical Operation.

—As has been pointed out many times before, but should be emphasized in any paper upon this subject, it is not always easy to determine by bimanual or rectal examination, the extent of the cancerous process beyond the cervix. Unfortunately, in the large majority of cases the uterus is fixed, the broad ligaments invaded and the whole picture is that of far advanced cancer, inoperable so far as the radical operation is concerned. The border line cases where there is good movability of the uterus should all be placed among the doubtful cases, the final decision possibly not to be definitely arrived at until after exploratory laparotomy. The most careful and searching investigations should be made of the physical condition of prospective radical abdominal hysterectomy patients with a view of excluding those whose vitality does not warrant their undergoing such a severe operation. It is poor surgical judgment to perform this operation upon patients whose renal function is below a certain point, whose blood pressure is high or whose heart action is impaired. While the technical difficulties of performing the extended operation for cancer of the cervix can be overcome in markedly obese women, such a patient is usually a poor subject for any operative procedure and should be excluded on the ground of too great risk. When I say that the radical operation under discussion will always be attended by a high primary mortality, I have in mind, not the impossibility of overcoming the technical operative difficulties, but the inherent difficulties surrounding the estimation of the vitality of a given patient. Advances will come in the perfection of all measures tending to place us in a better position to estimate the vitality or debility of a given patient.

Causes of Primary Death.—In addition to mistakes made in the selection of cases, where the case was too advanced to be operated upon yet the operation once started had to be carried through, the most common cause of death was shock, with or without excessive hemorrhage and peritonitis. In Table 7 have been enumerated

¹ Busse, Cobb, Kelly, Neel, Sampson, Taussig, Wertheim.

the causes of death in the 16 cases dying as a result of the operation. As before pointed out, 10 out of 16 were due to shock either with or without excessive operative hemorrhage. Undoubtedly a number of these patients would not have died had the operator at the time had the experience derived from these 60 operative cases. A great deal of time was wasted in locating the ureters and tying the uterine arteries. No time is lost at present upon these procedures. Just the little procedure of removing the loose tissue covering the ureters after the broad ligaments have been opened, so that the ureters are brought into plain sight, saves much time. It also aids in the clamping of bleeding pelvic veins since no fear is felt that the ureters will be seized by the hemostats.

The more one performs the radical abdominal operation, the less bleeding he encounters, although with the greatest precautions and care serious bleeding may occur.

I am still opposed to the exaggerated Trendelenburg position in this operation, especially in the cases of obese patients. Excessive weight upon the diaphragm impedes respiration and undoubtedly increases shock. It is better to use the moderate Trendelenburg after packing back the intestine, while the patient is in the exaggerated position.

Peritonitis can only be avoided by the most scrupulous and painstaking disinfection of the septic cervix prior to the opening of the abdomen. At present I am using the curette and actual cautery, followed by the pouring of iodine into the vagina, iodine gauze being then packed against the cervix. I am not now using the right-angled clamps, trusting to their preliminary cervical and vaginal disinfection for protection against peritonitis and implantation metastases. The edges of the cut vagina are, however, run over by the actual cautery before closing over with peritoneum. Personally, I do not like the clamps and will do away with them if I can. However, cases will be watched carefully, and if more local recurrences take place after this method, I shall return to the clamps. Only the retroperitoneal spaces should be drained. Vagino-pelvic drainage is unnecessary and apt to give rise to, rather than prevent, general peritonitis.

Recurrences.—There have been 14 recurrences after the radical operation for cancer of the cervix, 9 out of the 14 recurrences taking place the first two years after the operation (Table 9). A rare case of recurrence occurred 6 years after operation, as before stated. Each patient should be warned before leaving the hospital of the danger of recurrence, and should be advised to report frequently either to the operator or to a competent physician. It has been my experience that after the patient has been free of the disease for a number of years, she is apt to grow

careless, and will not even answer letters of inquiry until repeatedly written to.

I beg leave to quote some of the conclusions set forth in my last paper on this subject, as I have seen no reason for a change of opinion since the article was published in 1916.

TABLE 1—*Cancer of Cervix*

Number of cases.....	380
Radical abdominal hysterectomy.....	60
Percentage of operability.....	15.7

TABLE 2—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Number of cases.....	60
Primary deaths	16
Primary mortality	26.6%

TABLE 3—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Number operated at least 5 years.....	47
Primary deaths	14
Number dying of intercurrent disease..	3
Number well at least 5 years after operation	18

TABLE 4—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Patients operated upon at least 5 years.	47
Patients lost track of.....	0
Dying of intercurrent disease.....	3
Well at least 5 years after operation....	18
Permanent cure of all patients operated	40.9%

TABLE 5—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Patients operated upon at least 5 years..	47
Primary deaths	14
Lost track of.....	0
Dying of intercurrent disease.....	3
Well at least 5 years after operation...	18
Permanent cure of patients surviving operation	60%

TABLE 6—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Collected and personal cases

Number of cases.....	1,191-60
Percentage of primary mortality.....	18.4-26.6
Percentage permanent cure all patients operated upon	39.4-40.9
Percentage permanent cure all patients surviving operation	48.9-60

TABLE 7—*Cancer of Cervix*

Radical Abdominal Hysterectomy

Causes of death

Shock	10
Peritonitis	3
Embolus	2
Pyelonephritis and uremia.....	1
	16

TABLE 8—*Cancer of Cervix*
Radical Abdominal Hysterectomy

Patients well 12-17 years after operation..	6
Patients well 7-12 years after operation..	12
Patients well 1-4 years after operation..	9

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27TABLE 9—*Cancer of Cervix*
Radical Abdominal Hysterectomy
Recurrences

1 year after operation.....	5
2 years after operation.....	4
3 years after operation.....	2
4 years after operation.....	2
6 years after operation.....	1

—
14

CONCLUSIONS.

1. Further experience with the radical abdominal operation for cancer of the cervix, confirms the belief that it is an exceedingly dangerous procedure, and will always be attended by a high primary mortality.

2. Even if the percentage of operability of cases of cancer of the cervix markedly increases in this country and elsewhere, there will always be border line cases attended by a high primary mortality.

3. This is true because it is not always possible even with the greatest care in examination of the patient prior to operation, to estimate the extent of the disease.

4. Errors in judgment mean death from shock if the disease be too far advanced, or failure to complete the radical removal of the cancerous uterus.

5. However, in spite of high primary mortality, it is the only procedure with the possible exception of the extended vaginal operation, which holds out any reasonable promise of a permanent cure.

6. Primary and end results of the radical operation for cancer of the cervix must be considered together in order to judge of the good accomplished in a given series of cases.

7. Unless the operations be radical, the end results will be poor, and if they be radical, the primary mortality must be high.

8. If the end results be poor, the burden of proof is upon the radical abdominal operator to show why he did not choose a much safer palliative procedure.

9. In spite of the high primary mortality, the end results in those surviving the operation encourage us to continue with the procedure in suitable cases.

THE RADIUM TREATMENT OF
UTERINE CANCER.*

By CURTIS F. BURNAM, M.D.,

BALTIMORE, MD.

THE well known and generally accepted rule that success in treating malignant new growths is directly proportional to the thoroughness of treatment and indirectly proportional to the extent of the disease holds true nowhere more than in cancer of the uterus.

Let us redouble our efforts to bring uterine cancer sufferers to treatment while the disease is still in its initial stages. Every good doctor should be a missionary amongst his own patients, and surely much can still be accomplished by an organized effort to bring to the laity a knowledge of the symptoms and diagnosis of this prevalent and deadly disease.

In order to secure the very best results from treatment with the agencies now in our hands, it is, in my opinion, necessary that a widespread, systematic and thorough study of the cases and the methods of treatment be undertaken anew. The technique of radical hysterectomy for uterine cancer had been developed and employed for more than ten years when radium made its appearance. It had achieved a splendid success and had demonstrated that some cancers of the uterus were curable, and permanently curable. Nevertheless, hysterectomy was beginning to fall into a little undeserved discredit through a well-intentioned but fruitless effort to employ it in cases already inoperable. Many failures obscured the successes and tended to discourage both doctor and patient and bring about a hopeless state of mind.

The advent of radium brought a new solution to the problem and immediately widely extended the range of patients who could be fruitfully treated. At first no claim was made for the new treatment other than that it was a splendid palliative, checking hemorrhage, drying up foul discharge, relieving pain and prolonging life; and if it did only these things radium would still be well worth all our efforts. Happily we now know that this new agent can actually cure and permanently cure many cases of uterine cancer where no other treatment offers any hope whatever.

In considering the indications of treatment, a separation of operable from inoperable growths is essential and necessary; and likewise cancers of the body of the uterus, vagina and cervix must be separated. Inoperable cancers should be divided into a number of sub-groups in order that a definite limit may be set for the indications of treatment in each class. The necessity for such classification is apparent when one considers that patients with general metastases, those with urinary bladder involvement, those with rectal involvement, those with parametrial fixa-

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

tion, those with local regional gland involvement and all recurrent cancers after operation are all classified together as inoperable cases. It is perfectly obvious that the kind of treatment applicable in these different classes of cases is quite different and the outlook toward both palliation and cure very variable.

The experiences which I propose to cite cover a period of eleven years and represent the joint activities of Dr. Howard A. Kelly, myself and our associates.

We had treated in all up to one year ago 700 uterine, cervical and vaginal cancers, and had excluded from treatment only sufferers with advanced general carcinomatosis, and not all of these, for it was impossible to refuse palliation in some cases where cure from the outset was out of the question.

I purposely omit from this consideration the cases treated during the last year as not enough time has elapsed to draw from them definite conclusions as to results.

For the sake of clearness, cancers of the uterine body, cancers of the vagina and cancers of the uterine cervix will be considered separately, and in each instance the operable and the inoperable cases will be treated of in sub-headings.

CANCERS OF THE BODY OF THE UTERUS.

Where there is no fixation and where there is no organic disease contra-indicating operation, hysterectomy should be the method of choice, for the extent of the disease is too much a thing in the dark and radium cannot be used with sufficient precision.

We have, however, abundant evidence as to the effectiveness of radium on adeno-carcinoma of the uterine body. In a group of patients, where the general health contra-indicated hysterectomy and where radium was used, we have seen not only cessation of bleeding and of discharge, but also a great improvement in general health and apparent cure extending over several years. Moreover, a complete histological demonstration that radium can cure cancer of the body of the uterus has been secured in several cases where the uterus has been removed after a preliminary treatment with radium.

When for any reason radium is employed in treating operable cancer of the body of the uterus, it is best given in a single exposure, the equivalent of four gram hours of radiation, with the material so distributed that every part of the uterine cavity receives as nearly the same treatment as possible.

While such a considerable proportion of the corpus cancers are operable, it is striking that in the inoperable cases the disease is likely to be very advanced and much more often generally metastasized than is the case with epitheliomas of the cervix or vagina. While we have seen shrinkage of tumor, alleviation of pain and improvement of general health follow efforts with

radium, up to the present time we have not seen a complete cure in a large inoperable cancer belonging to this class, and indeed our efforts most frequently have not even been rewarded by pronounced palliation. Occasionally we have been able to demonstrate the disappearance of large metastatic abdominal masses of corpus carcinoma following distance radiation through the lower abdomen, sacrum and perineum. In such treatments we have given as much as 150 gram hours radiation at a distance of five inches through six or more portals. In other cases we have opened the abdomen and implanted glass spicules, containing from one to ten millicuries each of radium emanation, throughout these masses. Here also we have had pronounced evidence of improvement; indeed, in several instances we felt that we had obtained cures, only to be undeceived later by the appearance of recurrence.

CANCERS OF THE VAGINA.

Early cancer of the vagina is rarely met with and there is very little available data as to the permanent curative value of operative removal. The cure rates reported in most clinics of the cancers of the vagina presenting themselves for treatment have not been much more than one or two per cent. Many eminent gynecologists have never had a cure. I, personally, have seen one operative cure.

Where the disease is advanced radium alone should be used. It nearly always acts as a palliative, and in a series of 129 cases we have had fifteen complete cures, four of which have been for more than five years and one for nearly nine years. Not one of these fifteen was early or operable. We therefore urgently recommend the employment of radium in the treatment of vaginal cancer.

Where the disease is superficial, the arrangement of apparatus inside the vagina should be such that each square centimeter of surface receives the equivalent of a gram thirty minutes' treatment.

Where there are large and fixed paravaginal masses, such surface applications should be supplemented by burying points containing radium emanation. The strength of the buried emanation depends on the size of the mass and has varied from two to three millicuries to more than fifty.

CANCERS OF THE CERVIX OF THE UTERUS.

This class is the commonest and consequently the most important group under consideration. In addition to the operable and inoperable subgroups, may I be permitted to introduce a third representing the border-line conditions between the other two?

An operable cancer I define as one in which the disease is confined to the cervix or only slightly involves the parametria and vaginal walls; a border-line cancer is one where the para-

metria are stiffened or the vaginal wall extensively involved or even where there is slight fixation to one side. Inoperable cancer includes, as already pointed out, a variety of stages where operation can no longer be undertaken with any hope of complete removal of the disease. As inoperable conditions should be classified, those cases where there is firm fixation to one or both pelvic walls, or extensive involvement of the bladder or rectum; cases where there is extensive lymph gland involvement and nearly all cases which are recurrent after operation.

Some conception of the possibility of permanent cure in cervical cancer by means of radium treatment is afforded by a study of our first 200 border-line and inoperable cases. In June, 1915, at the annual meeting of the American Medical Association in San Francisco, Dr. Kelly and I reported apparent cures in fifty-three of these 200 cases. Only nine of these cures had been longer than one year. Of these fifty-three cases reported five years ago, thirty are still living and free from all evidence of the disease, and in one case the cure has been for eleven years. This represents a permanent cure rate of 15 per cent in a group of cancers where not 1 per cent could be expected by any other means.

Taking our experiences as a whole, the following results have been obtained in cancer of the cervix:

	Cures
Radiation alone—operable cases.....	50%
Radiation preliminary to operation—operable cases	46%
Radiation prophylactic after operation....	43%
Radiation in border-line	31%
Radiation in inoperable	9%
Radiation in recurrent inoperable.....	11%

In considering the relative values of surgical and radium methods, there is possible competition only in sub-group 1, the operable cancers.

It is true that the anatomical structure and position of the cervix permits of an intensity of radiation without serious injury to normal structures quite impossible in most places where epitheliomas occur. However, in skin cancers particularly we have been impressed by the fact that certain growths enormously tolerant to radiation are readily curable by extirpation, and it is not a far step to assume that the same condition holds true in cervical cancers. Granting that this is the case, a combination of radium and operation would seem to be the most logical treatment. I should advise that radium alone be limited to the old, the diabetic, the nephritic and other constitutionally sick cervix cancer sufferers; that radium and operation or operation alone be used with the remainder until definite conclusive evidence is at hand as to the relative values of the different procedures.

I feel that an endeavor should be made to develop a systematic regional gland extirpation

in cancer of the cervix uteri such as we employ in cancer of the breast and cancer of the lip. This procedure has been abandoned largely because it added so much to an already long and dangerous operation. If, however, operative removal of the uterus be limited to the early cases, hysterectomy is neither a long nor dangerous operation and the gland removal could be safely carried out. In the more advanced cases the treatment of the local lesion should be limited to radium and a systematic surgical gland removal carried out.

The implantation of radium emanation in abdominal metastases which are not surgically removable can only be carried out through an open abdominal incision. While, therefore, in the early operable cases radium may be looked upon as an assistant to surgical removal, in the border-line and advanced cases radium should occupy the principal position and surgery be the helpful aid.

One of the chief charms of radium as opposed to surgery is its freedom from danger. I should like to call attention, however, to the fact that injudiciously and excessively employed it can produce very grave injuries and even cause death. It should always be borne in mind that all living tissues are injured by radium radiation and that its value in treating cancer rests upon a greater tolerance to it of normal than cancerous tissues. One must treat so that the dose is great enough to cure the cancer and yet not so great as to destroy all normal contiguous tissues.

Over-radiation, producing a burn which heals in a few weeks, sets up two processes: first, an endarteritis and, secondly, a limitation of the power of reproduction of the cells of all the tissues. The result of these two processes is that usually from four to ten months after the healing of the burn a new ulcer sets in, which is very painful and clinically closely resembles cancer. The healing of such ulcers takes months and vesical and rectal fistulae frequently follow.

In the operable and the early border-line cases efficient protection of the rectum and bladder and yet adequate radiation is comparatively simple; in the very extensive inoperable cases such ideal conditions are often impossible of attainment.

A safe and effective treatment of the cervix and the contiguous parametria can be secured by a disposition of tubes over and in the cervix in such a way that four gram hours of treatment can be given in a single dose, or six gram hours if treatment is divided into four equal doses at intervals of a week. It seems to me that this second treatment is the better of the two. Heavy lead screens should be adjusted between the cervix and the rectum. If this technique is carried out one practically never sees proctitis or painful burns.

In recurrent deep masses and in high parametrial extensions the employment of the burying technique already described is indispensable.

The value of trans-abdominal and distance treatment in cervical cancer is difficult of estimation. It is more likely to be efficacious in the basal cell type of growth or in the adeno-carcinoma of the cervix than in a squamous cell cancer. We have seen marked regressions in growths treated in this way. Most often, however, there is no improvement either anatomically or in amelioration of symptoms, and unless very prolonged treatments, running into the hundreds of gram hours, are given, I do not believe that the method is worth while. Efforts in this direction must go on, however, from the standpoint of development of radium treatment. I feel that the method of treatment to be used in an advanced case is still in question and that dogmatic direction is out of the question, for the present, at any rate.

Before concluding, perhaps one other expression of opinion may be of interest. It is this: We do not think it is advantageous to surgically remove, after clinical cure has been obtained, uteri which have previous to radiation been inoperable, that is, fixed to the pelvic wall on one side or the other. That such a procedure may not be followed by any ill effect we have demonstrated, but the results where this procedure has been carried out have not been as satisfactory as where we have let the patients alone. This may be due to the fact that cancer cells can remain quiescent for many years, only to be stirred up by some trauma.

Let me emphasize that the beginner should not wade through all the misadventures which we, as pioneers, have gone through. The cost to the patient is too high. Take time, go to those who have had experience and learn how to treat safely.

SURGERY OF THE UTERINE FIBROIDS.*

By EDWARD J. ILL, M.D., F.A.C.S.,

NEWARK, N. J.

YOUR very good chairman has asked me to read to you a paper on the Surgery of the Uterine Fibroids. The subject is one in which I am deeply interested and have been so for many years. Unless I had been asked to speak to you I should not have dared to present so simple and every day subject. I am old enough to remember how patients died from these tumors and how helpless we stood by. I am old enough to remember a death rate of 50 per cent. on operative cases. But I am not so old that I do not wish to hold up my hand to defend the poor woman who has her uterus removed because of a harmless and symptomless neoplasm. Let us remember that about 28 per cent. of all women over 35 years of age have fibroid tumors. What I have to say is the outcome of

a study of about 600 operations for fibroids, all of which I have done myself. In a paper read to you two years ago I was particular to relate the statistics of my work and the indication for operation and I need not repeat it, save to say that since then I have operated on seventy cases more and have not changed my views in regard to indications nor the manner of operation. No deaths have occurred in these cases.

We are, however, approaching a new era in the treatment of fibroids. An era which promises great relief to our patients without the risk of operation and without pain. I am not prepared to say, however, that there will be no risk by the new treatment. There will always remain some cases that must be relieved by surgery. It will thus be our duty to select the character of operation for a given set of cases which is most likely to cure a patient and leave her in a healthy condition. The responsibility has become greater since and as I understand it, the tumors complicated by septic conditions, by other neoplasma or excessive size are not amendable to the new treatment. More than ever it will be our duty to have a clean cut diagnosis for the new treatment will fail if such is not the case. I shall advise my patients that operation will be safer when there are such complications. If there are other contra-indications we still have to learn them. It is not my intention to give the views of any writers but solely what has been my guide. There are three ways to attack these tumors either through the vagina or through the abdomen or by both. In my experience I have removed tumors by the vagina and abdomen only when I feared malignancy of the endometrium. The cervix was then everywhere circumcised and the bladder pushed away, after the cervix had been closed tightly by mattress sutures of linen thread. This was done to prevent cancer cells from infecting the wounded cellular tissue. The vagina was then packed with iodoform gauze. Now the abdomen was opened and the broad ligaments ligated from above downward. The previous incision through the vagina made all comparatively easy. It is a safe operation, but will not be called into play often because large fibroids complicated by carcinoma of the endometrium occur in less than 75 per cent. of one per cent. of all my cases. Small tumors in a freely movable uterus can be easily removed from below without endangering a contamination. Total vaginal extirpation is gradually dropping out for the more easily performed supra vaginal amputation. There still is a chance for a fine distinction whether we do the upper or lower operation. I prefer the lower operation where there is a freely movable uterus not above the size of a foetal head and in the woman who has had children. Septic uteri of that size should always be thus removed as well as uteri that had been treated mechanically or chemically. Then also uteri which have chroni-

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

cally enlarged and possibly lacerated, everted and eroded cervixes. Very fat women where the uterus can be pulled down to the vulva are easier cases. I have always insisted, however, that all uteri should be freely movable and the cervix sufficiently mobile to be dragged to the vulva. While in years gone by we have removed by the vaginal route, tumors reaching to the navel I now never do so. Morcellation by knife and scissors are a necessity. The ovaries in such cases can usually be retained. If it is thought wise to remove them it is easily accomplished. Often the space for the removal of the mass can be greatly increased by an anterior longitudinal vaginal section, pushing the bladder upward and laterally and protecting the bladder and ureters by an anterior retractor. The ligature material makes little difference. On the lower part of the broad ligament I usually use linen thread. On upper portion of the broad ligament plain catgut of small size. Nearly ten per cent. of my cases were thus operated on. A vaginal myomectomy is a nice and safe operation when it is definitely known that the tumor is single and can be reached by an anterior colpotomy and longitudinal incision of the anterior wall of the uterus. I have been called upon to do such an operation in 3 per cent. of all the cases. Such an operation can often be combined with plastic operations on the cervix or its amputation, the Watkins operation and the operation for injury of the pelvic floor and the rectovaginal septum. I know of no cases that need greater skill and give more satisfaction. I consider all plastic operations high art in surgery. The supravaginal amputation will be the choice in 85 per cent. of cases in my own hands at the present time. I am well aware that some still insist on a total abdominal extirpation for fear of carcinoma developing in the cervix. My own experience is such that I could not consider the argument since I have never seen such a development. The operator who subjects every fibroid tumor that comes into his hand to operation should have a very small death rate. The vast majority of tumors are uncomplicated. It is the complications that produce symptoms, and it is the complications that produce the indication for operation in my hands and it is the complications that produce the mortality. Outside of the hemorrhagic case, which is not a complication, we have to deal with the complication of a septic fibroid, inflammatory adnexa and consequently adherent uterus. Then we have ovarian neoplasms, ovarian hematoma and extensive peritoneal adhesion due to a passed acute appendicitis. Lastly we have the trying cases, technically considered, where the tumor has developed in the broad ligaments and in the lower segment of the uterus. In these last cases we are most apt to have the accidental wounding or ligation of the ureters. This accident can always be avoided by closely hugging the tumor and by

ligation of the uterine vessels as they are exposed. An enucleation of the tumor before the amputation eases the difficulty very much. I have never had the accident of injuring a ureter. In doing a supravaginal amputation we prefer to save the ovaries for our patients. Women feel psychologically better when they know their ovaries are retained and they certainly are physically better. The younger they are the more pronounced is this factor. The menopause symptoms are less pronounced and more apt to occur at the time physiologically designated and then only in a moderate degree. My investigation in this regard has extended over many years and I feel rather strongly about it. Of course when there is extensive disease of the adnexa no conservation should be attempted. The likelihood of severe pain in the affected organ is great. I am not as yet convinced that the new treatment is not going to give us trouble in this line. In my 600 operations I have seen but one woman return years after the operation with an ovarian neoplasm. Where there are extensive adhesions of the omentum, intestines, bladder or other tissues they should be carefully separated from the tumor. It will often be better to cut these adhesions close to the neoplasm while the tissue is on a stretch. They usually terminate in a white line at which location the incision will not bleed. Sponge dissections are often valuable while the tumor is being steadied and lifted from the pelvis by a wire corkscrew. It goes without saying that all bleeding points of the tissues left behind should be carefully secured by catgut and all denuded bowels carefully covered over with the finest of linen thread. In my operations I prefer preventative ligation of the vessels. I prefer this to the clamp. There is less chance for wounding adjacent organs and less traumatism of the tissue left behind. The most important consideration, however, is that the ligature will not be applied in tissue, spread asunder and thus slipping, subjecting the patients to secondary bleeding. While the upper vessels may be ligated en masse the lower ones had better be ligated separately or with as little outside tissue as possible. It is thus that we avoid the ureters. After ligating and cutting the upper half of the broad ligament I invariably push away the bladder from the uterus and thus push away the ureters also. I am particular in cutting across the uterus not to cut as deeply posteriorly as anteriorly, because I do not wish to wound the vessels of the uterosacral ligaments, which you know come from the hemorrhoidals and not from the utero ovarian plexus. Now and then there is a patient who begs that the menstrual function be retained. In such the amputation should be made above the os interum. This, of course, can only be done when we are satisfied that no small myomata are situated in the retained portion of the uterus. It is my custom to begin the operation

in the left broad ligament, ligate and cut from left to right, until at last the right ovarian artery is ligated and cut. I then go over the whole ground again and place a second ligature on each main vessel. A medium-sized plain catgut is all sufficient if thoroughly tied with a square knot and a friction knot placed over that. There is always a little oozing at the edges of the cervix, which is completely controlled with a lockstitch of heavy plain catgut closing over and including large bits of the cervix. The stumps of the broad ligament and peritoneal flaps are then sewed over and the operation thus finished. I never cut out, disinfect nor cauterize the cervical canal. To disinfect and cauterize leaves dead tissue which comes in contact with the vagina and sooner or later sloughs off.

To cut the canal out only leaves a chance for infecting the knife if any infection exists. No sutures penetrate the canal for the same reason. Since discarding the non-absorbable ligature I have seen no suppuration in the canal. There are two conditions which will admit of a myomectomy. In young women desiring offspring we may occasionally be permitted to thus remove more than one tumor. This will prove a failure many times and later necessitate a hysterectomy. The ideal case for myomectomy is the single tumor that either produces pain or bleeding. It makes no difference whether the tumor is intrauterine or intramural. In the former we may fearlessly split the uterus into the cavity. The greatest care, however, should be exercised to exactly and widely coapt the wounded surface. This can only be done with sweeping sutures, either continued or interrupted. I prefer the former and the use of plain catgut. I also insist that perfectly clean instruments only be used in enucleating the mass and that not even the gloved finger should touch the wounded uterine tissue. I have never lost a case. Myomectomy in the pregnant uterus is admissible when warranted by symptoms.

Vaginal extirpation of large fibroids either solid or sloughing with dilated cervical canal is no difficult operation if the dilation is sufficient to morcellate the mass. If it becomes increasingly difficult we may be obliged to split up the anterior wall of the cervix after transverse incision of the vagina or even a longitudinal anterior incision of that organ. In septic cases I should hesitate to open up so much cellular tissue. Small fibro polypi are easily removed by simple enucleation or by simply cutting through the pedicle with a pair of scissors or else by torsion. This procedure is so simple that it hardly deserves the prerogative of an operation. Lastly I wish to speak of an operation which still has a place in surgery though it is called for less and less, thanks to better education of the medical profession. I have in mind the large septic cases where a long total extirpation is out of question owing to the precarious condition of

the patient and where a supravaginal amputation would likely result in contaminating the peritoneum. I have in mind the fixation of the cervix in the abdominal wall by large pins and the constricting of supravaginal portion with rubber ligature. The tumor should not be cut away until the abdomen has been thoroughly closed thus preventing contamination of the peritoneal cavity and the area opened by the incision. The operation is one that can be done with great rapidity, bloodless and with the greatest hope of success providing always that there is no peritonitis, no phlebitis nor distant secondary septic deposits.

THE TREATMENT OF UTERINE FIBROID AND UTERINE HEMORRHAGE BY MEANS OF RADIUM AND X-RAYS.*

By GEORGE E. PFAHLER, M.D.,
PHILADELPHIA, PA.

IN this paper no mention will be made of the use of radium and the X-ray in the treatment of carcinoma of the uterus, because this phase of the subject will be amply dealt with by others on this program.

Both Roentgen rays and radium are now recognized definitely as a means of treatment of uterine hemorrhage and uterine fibroids. In many of the large clinics, both in this country and in Europe, it is the method of choice. Kelly and Burnham¹ say: "In its brilliancy of curative results it is fully equal to radical surgical procedure while offering the advantages of freedom of pain and the various post-operative complications and sequella. Furthermore, when radium fails we still have the operation to fall back on and have lost nothing in the waiting." J. G. Clarke² says: "Within certain limitations we may, with positive assurance from our observations of more than 150 cases, assume that, from the standpoint of efficiency, safety and morbidity, this remedy must supplant surgical intervention in these tumors and for the relief of intractable myopathic hemorrhages." Krönig³ says his clinics have abandoned the operative treatment of fibroids for treatment by the Roentgen rays except in those occasional cases where it appears that myomectomy may leave a functioning uterus in a young woman. The argument here is that the Roentgen rays are just as efficient in their action as total ablation and devoid of all danger to life, for an operation carries with it operative mortality, even though it is small. The artificial menopause symptoms in general are not nearly so pronounced as after operation.

The first case of uterine fibroid treated by the X-rays and recorded in America was treated by Dr. J. E. Hett, of Ontario, Canada, published in the *Journal of Advanced Therapeutics*, Septem-

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

ber, 1904. During the same month and in the same year Deutsch⁴ reported upon the relief of the symptoms in four cases of uterine fibroid. Since then thousands of cases have been treated. I treated my first case of fibroid of the uterus in January, 1906, at the request of Dr. Mary Griscom. My experience, therefore, extends over a period of fourteen years. I, therefore, have had a period of observation long enough to notice or to learn of any unfavorable results which might follow such treatment, and up to the present time I can only record the greatest satisfaction on the part of myself and of my patients. At first I depended upon the Roentgen rays entirely for my results, but more recently I have made additional use of radium, and I believe that the combination in many cases offers distinct advantages.

Theory of the Effects of Radiation.—At first the effect was thought to be entirely due to the action of the rays upon the ovaries which are known to be extraordinarily sensitive to the action of the rays. It had been observed in some instances that fibroid tumors disappeared spontaneously after the menopause, and while this occurs only occasionally, it was sufficient to give some foundation for the theory of this action. Undoubtedly part of the action of the rays in the control of hemorrhage of the uterus is due to its effect upon the ovaries. Corscaden⁵ says "the action is due to destruction of the corpus luteum or the endometrium." While the action of the radiation, either from the Roentgen rays or radium in the control of hemorrhage, is probably chiefly upon the ovaries, I am quite sure that the disappearance of uterine fibroids under radiation is not chiefly due to the action of the rays upon the ovaries: first, because in many instances in which uterine fibroids were present for a considerable time after the menopause, they have been made to disappear under radiation, in which instance the results could not be ascribed to the action of the rays upon the ovaries; second, in a case reported by Dr. John A. McGlinn and myself⁶ the tumor was made to disappear without stopping the menses. This case refers to a young woman of 24, married, and very anxious for children, in whom, through operation (the details of which can be obtained from this former paper), Dr. McGlinn found a fibroid occupying the posterior portion of the body of the uterus. The uterus was not removed and later was treated by the Roentgen rays with the hope of controlling or causing the disappearance of this fibroid without affecting the ovaries. The rays were concentrated upon this tumor, protecting the ovaries from any exposure. The patient at no time ceased menstruation. The tumor completely disappeared, after which she was allowed to become pregnant, and in due time was delivered of a normal child under normal conditions. This proves beyond a doubt that, at least in the case of fibroids of the uterus, the radiation is directly effective upon the fibroid, and this fact should

serve as a guide both as to the amount of treatment we need and as to our means of attacking the fibroid. It argues that we must not hope to get rid of the fibroid merely by treating the ovarian region.

Indications for Treatment by Radiation.—1st. All cases of myoma in older women in whom there is already a well-advanced anemia which may be the cause of an anemic heart.

2d. All elderly and young women with myomas in whom there is marked organic heart disease, diabetes, mellitus, chronic nephritis, marked lung disease and goitre with cardiac symptoms.

3d. All patients beyond the age of 40 years in whom there is no contra-indication to treatment.

4th. In all cases of younger women in which the tumor is small and in which there is no accompanying or coincident inflammatory disease, and in whom there is associated hemorrhage.

5th. In uterine hemorrhages not due to some constitutional disturbance.

6th. It should be given serious consideration in all cases in which the alternative procedure is a total extirpation of the uterus.

Contra-indications for Treatment by Radiation.—1st. All cases of myoma in which the tumor is pedunculated or which can be excised without destroying the reproductive powers of the patient.

2d. Fibroids that are believed to have undergone malignant degeneration or that have become gangrenous should not be treated, but if malignant should be operated upon and followed by deep Roentgentherapy.

3d. Fibroids associated with disease of the adnexa. Clarke advises operation in cases having pain lateral to the uterus, and says that pain, when present, is seldom relieved by radiation even though the tumor disappears. He also says that old salpingitis has flared up under radium treatment.

Special Indications for the Use of the Roentgen Rays Alone.—The Roentgen rays have been available over a much longer period of time than radium, and they are also more generally available. Therefore, one can easily understand that many more patients have been treated throughout the world by the Roentgen rays than by radium. In the review of cases made by Gauss⁷ he divided his 1,395 cases into three groups according to the dosage given, and in the third group (which were the last cases treated) he stated that practically all of the cases of myoma and metropathy that presented themselves for treatment were treated, and of this group 95 per cent have recovered. This serves to illustrate, therefore, that all cases given under the indications for treatment can be treated successfully by the Roentgen rays, but patients which I would especially confine to the use of the Roentgen rays alone are:

1st. The fibroid cases occurring in single

women in whom there is some objection to the introduction of radium within the uterine canal.

2d. The metropathic hemorrhages are especially responsive to radiation whether from Roentgen rays or radium, and usually comparatively little treatment is needed. Therefore, when these occur in single women, of advanced age, they may be expected to respond to the Roentgen rays without the introduction of radium into the uterine canal, and will therefore be more acceptable to this class of patients.

3d. Fibroid cases in which the tumor is lying anteriorly or posteriorly to the uterus, or even entirely on one side, in which instance the rays can be directed only toward the tumor and protection given to either one or both ovaries which is not in the region of the tumor. This implies a very accurate diagnosis to determine the position of the tumor and so far as possible the position of the ovaries. Some definite information might be obtained by the pneumo-peritoneal Roentgen examination as to the exact size and location of the fibroid and the ovaries. This seems to be a safe procedure. The successful treatment of a case of this kind also demands the most skillful Roentgen technique. In brief, it demands close co-operation on the part of both a skillful gynecologist and a skillful Roentgenologist.

4th. Any case of fibroid or uterine hemorrhage in which an anesthetic must be used for the introduction of the radium, and in which such anesthetic is inadvisable.

Indications for the Use of Radium Alone.—

1st. Metropathic hemorrhagic cases in which there is no contra-indication to the introduction of radium within the uterine canal. As mentioned before, these patients are extraordinarily responsive to radiation of both forms, and the choice is chiefly a matter of convenience.

2d. Menorrhagia or dysmenorrhea occurring in young women in whom there is no contra-indication to the introduction of radium. Excessive doses must not be used in any of these cases for fear of producing a permanent amenorrhea.

3d. Cases of small fibroids associated with severe hemorrhage, and in which there is no contra-indication to the introduction of radium.

Indications for the Combined Use of Radium and the Roentgen Rays.—1st. All cases of large fibroids that are to be treated by radiation, especially when associated with severe hemorrhage. I have succeeded in causing the disappearance of fibroids when they extended two inches above the umbilicus by the use of the Roentgen rays alone, but this requires much radiation through the abdominal wall. It should be our aim to limit radiation just as much as possible through healthy tissues, and by combining with the Roentgen radiation through the abdomen, the use of radium within the uterine canal, one obtains a valuable additional point of crossfire, which

surely diminishes the amount of radiation needed through the abdomen. In other words, one obtains all possible advantages of the Roentgen radiation and in addition all advantages possible from the radium. The two agents or methods supplement each other and in no way interfere with one another.

Clarke limits the use of radium in the treatment of uterine fibroids to those in which the tumor is small. This is rational, for the effective radiation from radium exerts its influence only within a few centimeters. Radium introduced within the uterine canal may therefore be expected to extend its effect to the ovaries and stop their functions, thereby stopping hemorrhage. It will exert its direct effect upon the endometrium, thus eliminating any local cause of hemorrhage. It will also extend through the uterine walls from the uterine canal for several centimeters sufficiently to cause the disappearance of a small uterine fibroid.

Radium gives valuable aid to the Roentgen rays because the radium rays exert their influence most markedly directly at the point where the action of the Roentgen rays are weakest. On the other hand, the Roentgen rays can exert their influence upon the tumor higher in the abdomen where the radium exerts least influence. It can be clearly seen therefore that the two agents form most valuable adjuncts to each other in the treatment of large fibroids of the uterus.

2d. Uterine fibroids in which hemorrhage is a conspicuous symptom. This group can be more promptly relieved by the combined action of the Roentgen rays applied externally and the radium applied in the uterine canal. The radium is brought in rather close proximity to the ovaries and because the uterine cavity is especially tolerant to the action of the radium sufficient effect can be immediately obtained to limit the function of the ovaries, and in addition it causes a local destructive effect upon the mucous membrane of the uterine canal, thereby eliminating any local cause of hemorrhage. This action of the radium upon the ovaries is then supplemented by the action of the Roentgen rays applied through the abdomen. The radium and the Roentgen rays must not be used conjointly through the abdominal wall, or a serious burn is likely to result.

In a paper presented before the Eastern Section of the American Roentgen Ray Society at Atlantic City, January 30, 1920, Dr. Boggs showed that the Roentgen rays would exert a deeper effect when applied through the abdominal wall than radium, based upon calculations made by Dr. Viol and those of Rutherford.* Therefore it would seem that when the radiation must be applied through the abdomen it should be done by the Coolidge tube. I have made the following calculations to demonstrate the greater value of the X-rays for deep effect:

The shortest distance through the abdominal wall to a uterine fibroid or carcinoma is 2 c.m.

and the average distance from the skin to the deeper portions of the pelvis or the deeper portions of a fibroid is approximately 10 c.m.

The intensity of radiation from an X-ray tube or from radium at a point decreases with the square of the distance. The total quantity of radiation at any given deep point is influenced by divergence (decreasing with the square of the distance) and by absorption.

Radium when used for deep effect is usually applied at 2 c.m. from the surface of the skin. The intensity at the skin surface as compared with 1 c.m. (allowing nothing for absorption) $= \frac{1}{2}^2 = \frac{1}{4}$. The intensity of the radium rays at 2 c.m. depth of tissue is $(2+2=4 \text{ c.m.}) \frac{1}{4}^2 = \frac{1}{16}$, and at 10 c.m. depth $(2+10)=1/12^2=1/144$. We are limited by the erythema dose or skin toleration. The proportion of skin radiation from the radium which reaches a depth of 10 c.m. $= \frac{1}{4}$ compared with $1/144$, or approximately 2.8 per cent of the skin radiation would reach a depth of 10 c.m. It would therefore require thirty-six portals of entry in order to give an erythema dose at a depth of 10 c.m. by crossfiring.

Now let us compare the radiation at a depth of 10 c.m. when coming from an X-ray tube. According to our technique for deep therapy the rays should be applied from an X-ray tube at a distance of 25 c.m. (10") and $1/25^2=1/625$ —the amount reaching the surface of the skin. At a skin depth of 2 c.m. the distance would be (25 c.m.+2 c.m.) and the intensity $=1/27^2=1/729$. The proportion of the skin dose to the dose at 2 c.m. in depth from the skin would be as $1/625$ with $1/729$, or approximately 86 per cent. (In the case of radium 25 per cent of the skin dose reaches a depth of 2 c.m.)

The intensity of radiation at a skin depth of 10 c.m. when coming from the X-ray tube at a focal-skin distance of 25 c.m. $(25+10=35 \text{ c.m.}) = 1/35^2=1/1225$. The relation of the 10 c.m. deep dose to the skin dose would be, therefore, as $1/1225$ is to $1/625$, or approximately 51 per cent, while radium applied at a focal-skin distance of 2 c.m. gives at 10 c.m. in depth only 2.8 per cent, or, in other words, approximately eighteen times as great a proportion of the radiation which can be applied to the skin will reach the depth of 10 c.m. if the X-rays are used as if radium is used.

The second factor governing the amount of radiation reaching a deep point is the tissue absorption. According to Viol, the hard X-rays will be half absorbed in 4.9 c.m. of tissue, and the gamma rays will be one-half absorbed in 26.5 c.m. of tissue. Therefore, approximately 75 per cent of the hard X-rays will be absorbed in the 10 c.m. of tissue (it is the rays that are absorbed that produce results) and only 25 per cent (based on absorption) would reach the deepest point at a skin depth of 10 c.m., but since the law of intensity (or divergence) allows 51 per cent of the X-rays to reach this depth we have the actual

amount reaching the deepest point considering both absorption and divergence 25 per cent of 51 per cent or $12\frac{3}{4}$ per cent of the total quantity reaching the surface of the skin of the abdomen. Therefore, if the X-rays are applied through eight portals of entry at a focal-skin distance of 25 c.m. directed toward a certain skin depth point of 10 c.m. an erythema dose would be given at this depth.

In the case of radium under the law of absorption approximately 7 per cent of the gamma rays will be absorbed in the 10 c.m. of tissue, leaving on the basis of absorption approximately 93 per cent of the gamma rays to reach this depth, but on the basis of divergence the intensity of the gamma radiation at 10 c.m. deep is only 2.8 per cent. Therefore the total gamma radiation reaching 10 c.m. $= 93$ per cent of 2.8 per cent, or approximately 2.6 per cent. The radium will deliver, therefore, 2.6 per cent of the skin dose at a depth of 10 c.m. as compared with the 12.75 per cent when the X-rays are used. In other words, these calculations show that nearly five times as great a proportion of the surface radiation coming from an X-ray tube reaches 10 c.m. in depth as compared with radium.

Types of Hemorrhagic Cases to be Treated by Radiation.—I cannot do better than refer to the classification given by C. Jeff Miller:⁹

"Group I. Myopathia Hemorrhagica (hemorrhage of the menopause)." These are especially responsive to radiation when not due to malignancy, and even when due to carcinoma of the cervix the results appear to be better than those obtained from surgery, according to the observations of Janeway,¹⁰ Adler,¹¹ Bailey,¹² Kelly and Burnham and others, when properly and thoroughly applied.

"Group II. Chronic metritis, polypoid endometritis, hyperplasia, fibrosis, etc." All of these cases may be expected to recover promptly.

"Group III. Myomata. For small or medium sized growths and those presenting contra-indications to operations, radium is the ideal remedial agent." In all this group of cases either radium or Roentgen radiation will produce good results and the combined radiation may be expected to produce more prompt results than either agent alone.

"Group IV. Uterine Bleeding in Young Girls." Radiation may be expected to control hemorrhage in this class, but great care should be exercised in diagnosis and also in the application of the radium or Roentgen rays. It is better to use small doses and repeat if necessary until the desired result is produced. Some of these cases are especially sensitive to radiation and a permanent amenorrhea may be produced unexpectedly. Therefore, if small doses are used and care exercised, good results can be produced.

Advantages of Radiation.—1. The treatment is painless when the Roentgen rays alone are

used, and when radium is used it is only painful in so far as dilatation of the uterus is painful.

2. There is no mortality. While operative mortality is low, it still exists.

3. It preserves, to a certain extent we believe, the internal secretions, which are lost in a complete oöphorectomy.

4. It does not interrupt the usual habits where the Roentgen rays are used alone, and only interrupts for a few days when radium is used.

5. Prolonged confinement in the hospital is avoided.

6. In skilled hands it is without risk.

7. The menopause is brought on gradually when desirable.

8. The amount of treatment can be graded to the needs of the patient.

9. In certain cases treated by the Roentgen rays in which the fibroids involve the body of the uterus the ovaries can be protected whereby sterility is avoided and the patient remains capable of bearing children.

Disadvantages or Dangers from Radiation.—

1. There is frequently associated with the treatment a certain amount of nausea and prostration which depends in part upon the sensibility of the patient and the amount of radiation, whether this be intra-uterine or abdominal. Approximately one-fourth of the patients suffer from these symptoms. They are not really serious and usually disappear within a few hours or a few days, and, so far as my observation goes, they have never left any ill results. 2. There is danger to the overlying tissues of the abdomen if the Roentgen rays are not applied properly. By careful attention to technique and exact measurement of the skin dose, this can be eliminated. 3. The radium should be applied under aseptic precautions, or infection may result. 4. It is claimed to be more costly than operation. In a sense this is true. However, if one considers that by this treatment the expense of board and hospital care is eliminated, both in the case of charity and private patients, and in both instances they can go about their usual duties, I believe that we must conclude that it is not more expensive. Kelley (*Surg., Gyn. & Obs.*, October, 1918, p. 402) enumerates the disadvantages of operation as compared with radiation as follows: "The risk of operation is considerably increased when the hæmoglobin is below 30: dread of cardiac embolism: protracted convalescence: untoward sequela such as post-operative suppurations, adhesions, hæmatoma, infections of the cervical stump, ventral hernias, and prolapse of the vaginal vault: usually several months before the patient can take up her routine duties."

Results of Treatment by Radium.—1st. Hemorrhage is relieved. At times when patients have been bleeding almost continuously for several months, the hemorrhage may cease within a few

days after the application of radium or the Roentgen rays, and is more likely to cease when both agents have been used. Ordinarily the first period after the radiation is not much influenced. This is especially true when the radiation has been applied shortly before the time of the menstrual period. It is, therefore, desirable to make the application of either radium or the Roentgen rays as long before the menstrual period as is possible. The second menstrual period is usually very much diminished or absent, and the third is practically always absent. 2d. The disappearance of the tumor is the latest result and generally there is no appreciable difference in the size of the tumor during the first month following the first course of treatment. During the second month there is generally a distinct reduction in the size of the tumor, which can be appreciated by the patient as well as the attending physician. After this there is a progressive diminution in the size of the tumor which continues long after the treatment has been discontinued. In one of my early cases, at the beginning of treatment, the tumor extended to the umbilicus. At the end of treatment and when the treatment was discontinued it was the size of a grapefruit. When next examined at the end of a year it was the size of an orange, and when examined five years after beginning treatment it had entirely disappeared. In a paper read before the Section on Gynecology of the Michigan State Medical Society, May 8th, 1918,¹³ I reviewed ninety-five cases of fibroid of the uterus which I had treated by the Roentgen rays alone, and in 75 per cent of these cases the tumors had disappeared. In 10 per cent of the remainder the tumors were greatly reduced in size. I believe that with modern technique, by the combination of the Roentgen rays and radium, practically all of the tumors can be made to disappear. Beclere¹⁴ found reductions in size of tumor in all of his 400 cases treated by the X-rays. 3d. The pressure symptoms which have been associated with fibroids are, of course, relieved in proportion and at the rate of which the tumor itself disappears. 4th. The anemia and the symptoms secondary to the anemia associated with severe hemorrhages are relieved in proportion with which the hemorrhages are controlled, and these generally improve during the second month, so that the patient's general health improved greatly, and there is no class of patients with whom I have worked who have more general satisfaction from radiation than this class of gynecological cases.

Technique.—The technique of radiotherapy, like that of surgery, cannot be accomplished in a few hours, nor a few days, or even a few months. Something can be accomplished even with a little knowledge, just as a radiotherapist might attempt to do some surgical operation, and in some instances get away with it, but in the great majority of instances he would fail and in some instances would be held up for criminal

negligence or criminal ignorance. So, too, radiotherapy is based upon scientific principles, which may be mastered. One should be familiar with the principles of the physics of radium and the Roentgen rays, and these principles should then be applied with skill, together with due knowledge of the pathology and of the clinical results and experience obtained by others and those obtained in similar cases. One can give a general outline of the plan of treatment, just as one can outline the general plans of an operation, but the skill and care with which the details are carried out will make the difference between success and failure. I cannot urge too strongly the greatest attention to the minute details of technique.

1st. *Roentgen Technique.* In general a dose of rays, as I apply it to any single portal of entry, consists of the use of five milliamperes of current with a voltage corresponding to a 9" parallel spark gap, or approximately 90,000 volts, applied at a focal distance of 10" for a period of twelve minutes and filtered through six millimeters of glass or aluminum. The amount of radiation as determined by these factors will vary considerably with the instruments used. No two instruments, I believe, can be depended upon to give exactly the same dosage even with these factors, but the above factors are approximate, and we must, in each instance, master the value of radiation from the particular instrument used. After this has been mastered, the dosage can be fairly well duplicated. The number of portals of entry will vary greatly with the size of the tumor and are usually from two to sixteen, applied anteriorly through the abdomen, and from two to four applied posteriorly through the perineal region. Such a group of doses constitute a series or a course of treatment, and such a series or course of treatment should not be repeated more than once each month. It will require from one day to a week or more to administer such a course of treatment, depending upon the number of doses and the amount of radiation that can be given at each seance. The number of such courses or series of treatments will depend upon the nature of the disease treated or the size of the tumor treated. It will also depend upon whether radium has been introduced into the uterus, for such introduction will shorten or lessen the amount of radiation needed externally. During the treatment and during the interval the patients can usually follow their usual occupations or their routine duties excepting for the time during which they are actually under treatment. Lack of skill in the application of the Roentgen rays may result in either a burn of the skin, or if insufficient treatment is given may result in failure to get the patient well.

2d. *Radium Technique.* For this one should be familiar with the principles governing radiation and also with the effect produced by any given specimen of radium for a given period of

time at a given distance from the parts to be affected with a given amount of filtration. Usually fifty to a hundred milligrams of radium are used and most frequently fifty milligrams. This is filtered through half a millimeter of silver and a millimeter of brass plus a millimeter of rubber, or a half millimeter of gold and a millimeter of rubber. First a cleansing douche is given. Tincture of iodine is then applied to the vulva and cervical canal. The uterus is then gently dilated. The radium is inserted into the uterine canal and retained there by gauze packing. Great care must be exercised in order that the radium be retained in the uterine canal, for if, by any chance, the radium should be deposited in the vagina it may lead to serious ulceration. The radium is left in place from twelve to twenty-four hours, excepting in the cases of young girls in whom one only wishes to reduce the menstrual flow, and in these cases it should not be allowed to remain more than three hours, and then repeated if necessary. It is better if the patient keeps off her feet for the twenty-four hours following the radiation, and it is well if she remain in bed until any menstrual flow ceases. A preliminary curettment is advisable if there is any intermenstrual flow. If carcinoma of the fundus is diagnosed, a preliminary hysterectomy should be done. No pain is caused by the action of the radium, but there is usually a yellowish discharge following the treatment which may last for several weeks, though usually it will disappear within six weeks.

Conclusions.—In the hands of men who have investigated this subject thoroughly and who have used radiation skillfully, the results have been brilliant, the patients have been enthusiastic, and there have been no regrets.

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Discussion.

DR. HAROLD C. BAILEY, New York: In Dr. Peterson's paper, the fact which appeals to me most is that these are statistics that we can absolutely rely on. They are not from foreign countries or from the hands of men whom we know have deceived some of us. I think the doctor's 41 per cent. of cures through five years is a most amazing percentage, and one which we must always pay attention to, and he is to be congratulated because of that high percentage, for I know that in the hands of most operators it would not be so high. We must consider his primary mortality, approximately 25 per cent. It occurred to me, as I was listening to his paper, that there is a possibility that the primary mortality might be cut down by pre-operative radium treatment, thus clearing up the cervix, and, again, from the standpoint of recurrences, it seems that nowadays we should at once get these early recurrences under radium treatment. Dr. Burnam, I am sure, and I have had a number of cases with early recurrences which have remained apparently well for long periods.

Again, from the number of cases (380 cases seen and 60 operated), in comparing statistics, one must take into consideration the fact that the men treating uterine cancer with radium take under their care a very high percentage of those that appear. In some clinics all the cases are taken. I know that Watkins receives all the cases that come to him, and I think, for a time, that Drs. Kelly and Burnam took all the cases coming to them.

If we translate a 15 per cent. cure, as Dr. Burnam has mentioned, for the number of 300 or 380 cases, or some such number, we will have a great many more cured at the present date than show from Dr. Peterson's statistics.

My own statistics through the years 1915 and 1916 (100 cases) show only a 10 per cent. cure at the present date, but we were starting a clinic at that time and all kinds of inoperable and advanced cases of carcinoma were taken, and if of the first year the only two cases that were in the early operable class are considered, they are both well.

It is very hard, I think, to arrange statistics so that they can be lined up. I feel as Dr. Burnam does, that the best way is for us to divide our cases. In my last paper, I, also, divided the cases into the early operable, the

borderline, the advanced cases, the early recurrences, advanced recurrences and prophylaxis. We have had a number of cases that have been radiated after hysterectomy, and we have them grouped.

In regard to Dr. Burnam's paper, I think I fall in very much, not only with his dosage, but with his method of treatment, and I am particularly pleased with his coming forth with the idea, that surgery must be kept in close contact with radium treatment. There is only one point that I may have misunderstood. I understood Dr. Burnam to say that of the operable cases—they should be operated. I believe they should be treated with radium and operated, and I think, that, is the method of taking care of those cases, and for the borderline cases I think Dr. Burnam has stated—radium treatment and operation. This afternoon I was consulting with Dr. Holden about the necessity of doing exactly this procedure, on a borderline case which he sent me a short time ago.

In regard to the vaginal cancers: My experience, until quite recently, has not been at all in accord with Dr. Kelly's and Dr. Burnam's. I think that with the dosage placed in compound, in silver or platinum tubes against the vaginal cancers, there have been deep sloughs many times, and in those cases that healed locally the cancer has advanced in other places in the pelvis or groin, but recently we have been burying bare tubes in these cancers, and it has opened up a new field with us. Since using the bare tubes in this group, some very remarkable disappearances have occurred. In burying the bare tubes we have been using the small dose, the highest dose being one millicurie and the smallest as low as two-tenths of a millicurie. Quite recently, in the last half-dozen cases, we have been using five-tenths of a millicurie of radium in a glass tube and then radiating outside, or surrounding the ulcer, with small doses, of two-tenths. Of course, at the Memorial (and Dr. Burnam also) large masses of radium are used, and we are able to place it in small glass tubes and have emanation periods going on constantly, so that we can be furnished with any stated amount of radium emanation on demand.

In regard to the dosage, which Dr. Burnam told us was 6 gram hours for a well marked cervical case, that is exactly our dose also. There is a little difference, I think, in the placing of the radium, but it really is only a matter of protection, or different ideas as regards the protection of the surrounding tissues. We place 2,000 hours in the cervix, 1,000 hours in the neck of the uterus, and then we place the lead application (sometimes called the "bomb") in the vagina, with a gram of radium, for three hours, bounding the parametrium on either side and over the center. It is placed

over the center to reinforce the radiation in the parametrium near the uterus.

If we add these doses together and compute them according to the method of Dr. Pfahler, they are the same, and we can measure them and record them in proportions of a skin dose. The skin dose, one might say, varies, but it varies through distances. Dr. Burnam's skin dose is 10, Dr. Janeway's 6, and mine 4. We maintain radiation at the different distances and when they are all measured by Dr. Pfahler's method, they are the same. In other words, Dr. Burnam's dose is 18,000 hours at 10 cms., Dr. Janeway's 12,000 hours at 6, and mine 3,000 hours at 4, and still they are all one and the same thing. There is only one difference, and that is the spread: the higher you go the more spread there is to the radiation.

I am going to leave the discussion of Dr. Pfahler's paper to some of the other members. There are some very interesting things that he has brought out, but he covered the subject so completely, quoting us all, that I don't see how one can criticise the text of his paper. I tried to keep track of the points at the start, but soon gave it up. There is this much about the paper: When you commence to read between the indications, 1, 2, 3 to 7 or 8, etc., you will find that almost everything indicates it, or so it seemed to me. I feel, and I think most of the gynecologists feel, that the tumor that is particularly adapted (the fibroid tumor) to radium is the small tumor, movable and diagnosed under an anesthetic, so that complications can be ruled out. With marked anemia and with the chronic heart, kidney and lung disease, the case at once passes into the radium field, but Dr. Broun in the tabulation of 2,000 cases found that there are some 25 per cent. that have troubles other than the fibroid; that is, pus tubes and other complications, and this fact must always be considered in selecting the method of treatment.

DR. GEORGE GRAY WARD, JR., New York: I consider it a great privilege to listen to these extremely valuable and interesting papers this afternoon, particularly so as at the Woman's Hospital at the present time we are in the position of wishing to observe and to learn, as we have only had radium at our disposal for a little over a year. Therefore any results that we have so far obtained are, of course, of no great value owing to insufficient time, especially those that relate to carcinoma.

We have had, during the past year, about 140 cases of all kinds which we have subjected to radium treatment, or radium with operation. I have recently looked up our records and find that out of 133 of these cases we had 32 fibrosis uteri and 25 fibromyoma, or 57 cases of non-malignant conditions. We have radiated 64 cases of carcinoma of the cervix, 3 of carci-

noma of the fundus, 5 of carcinoma of the rectum, 1 case of carcinoma of the vagina, 1 case of carcinoma of the vulva, 2 cases of carcinoma of the urethra, 3 breast cases and 2 bladder cases.

We have done the radical Wertheim operation in five cases following radiation, with a mortality of one case, which died from shock. We have done one panhysterectomy, following radiation in an old lady who had beginning carcinoma of the cervix, complicated with pyometria.

Our results, as far as we can ascertain at the present time, of the fibrosis uteri cases indicate that all of the thirty-two have been so far cured of their hemorrhages. Therefore 100 per cent have been relieved by the application of radium. In one or two cases it was necessary to repeat the radiation because of insufficient dosage. All of the twenty-five fibroid cases have been markedly benefited in so far that the bleeding has been corrected and the tumors have diminished in size in nearly all these cases, so they have been distinctly improved.

Of the sixty-four cases of carcinoma of the cervix ten are dead.

Thus within the year fifty-four are still alive. Of course, it is entirely too soon to know of the ultimate outcome as yet.

Of the three cases of carcinoma of the fundus none are dead, and of the five cases of carcinoma of the rectum two are dead.

It has been interesting to study the after-effects in the non-malignant cases of the application of the radium. Forty-four per cent of these fifty-seven cases which were non-malignant had decided nausea and vomiting; 22 per cent had marked evidences of pain either in the bladder, in the rectum or in the uterus, and 34 per cent showed no symptoms whatsoever that we could record.

In contradistinction to some of the statements that we have heard as to the after-effects of radiation of the uterine cavity, we have not found many cases with a pronounced leucorrhea as a result. It is of interest to know why that should be. I have wondered whether the fact that many using radium use the platinum or silver capsule alone in the rubber cover introduced into the uterus without further screening. I know Dr. Clark, of Philadelphia, uses radium in that way, and I think Dr. Taylor, of New York, does also. I always use a millimeter of brass on the outside of the capsule containing the radium, in accordance with the direction of Dr. Viol, of Pittsburgh. I wonder whether the additional distance and the additional screening of the brass accounts for the fact that we have not noticed the disagreeable leucorrhea so often spoken of by other observers.

We are very positive of the very great importance of making an examination of these cases under an anesthetic and of making a diagnostic curettage. You may think you are dealing with a fibroid, you may have only the signs of a fibroid and yet there may be a possibility of malignancy in the fundus. We have recently had just such a case of a large fibroid blocking the entire pelvis up to the umbilicus in a woman paralyzed with hemiplegia and therefore not a good operable risk. She had had bleeding for twelve or fifteen years. She had been seen by many gynecologists and there was no question as to the fibroid. We used radium in her case with cessation of the bleeding. Four months later she came into my office with a carcinoma, very apparent, at the cervix, which the pathologist believed undoubtedly originated in the corpus. So a diagnostic curettage is a very wise procedure, it seems to me, in all these cases, and also that they should be carefully examined under anesthesia.

We have thought that one of the reasons why we didn't get a satisfactory result the first time we applied radium in some of the fibrosis uteri cases was that sometimes these uteri are considerably increased in length—instead of being two and one-half inches, they are three or three and one-half inches, and a single capsule of radium failed to cover sufficient surface of the endometrium. Therefore it is now our practice in such cases to put two capsules of radium in, one above the other, tandem, so as to cover the uterine cavity more thoroughly with one application.

The question of radium and operation versus radium alone is one of great interest, and I was glad to hear the papers bring out the point that today the general trend of opinion seems to be that we should use radium and operation combined in those cases which are distinctly operable where the disease has not extended into the parametrium. Dr. Clark, of Philadelphia, I understand, takes the position that we should use radium alone and no operation, but to repeat the radium if necessary. It is sometimes difficult in such cases to be sure of what you are doing. Among the five cases that we operated with the radical Wertheim operation after radiation, one case was a very early carcinoma of the cervix. The patient had been operated by us for another condition and was under observation in the follow-up, and during the three months of the follow-up period she developed an ulceration of the cervix, which proved to be malignant. We applied radium and subsequently did a Wertheim. Her entire uterus with the ligaments was sectioned by Dr. Strong and no evidence of carcinoma could be found. That case is probably a permanent cure. In the four other cases we felt it was

wise to operate after radiation although there was no demonstrable evidence of the disease present. In all these four cases, carcinomatous areas were demonstrable, though in small amount, in certain portions of the specimen. In one case in particular, that seemed perfectly operable, the patient being perfectly well as far as we could tell, I removed glands as high as the bifurcation of the iliacs. One of them was as large as a hazel-nut, and was carcinomatous, showing that while one may think the uterus has been cured by radium, you cannot be sure of it without operation.

I am glad to know Dr. Bailey at the Memorial Hospital favors the operation combined with radium. I understood that most of their work has been without operation, and I would like to ask if I am correct.

DR. BAILEY: Yes, that is true.

DR. WARD: I was, as I am sure we all were, delighted to hear Dr. Peterson's splendid statistics. Certainly, they are encouraging to us all, and they make one feel that the pendulum, swinging away from operation, will have to come nearer the center line, because his results (40 per cent, or thereabouts, of permanent cures) are something that we must take notice of. I understand from a recent conference we had in the Memorial Hospital that the results there were about 10 per cent of cures. Is that correct, Dr. Bailey?

DR. BAILEY: Of all cases, Dr. Peterson said 40 per cent of operable cases.

DR. WARD: The use of the X-ray certainly has a most important place in the treatment of large fibroids complicated by conditions that make the case an unwise operable risk. I have recently had just such a case which I have referred to our Radio-Therapy Department this morning, in which a colored woman, with hemoglobin in the neighborhood of 20 per cent, was having profuse bleeding from a very large impacted fibroid. I had attempted to use radium, but with an unsatisfactory result. She has a very much contracted cervix and it was impossible to get the radium up inside the uterus. We could not operate on her and I have referred her to Dr. Herendeen, in charge of our radio-therapy clinic, and I am quite sure he will be able to accomplish what we could not with radium.

It seems to me the lessons we learn from these papers today is that we have aids of great value in all these methods of treatment—radium, operation and X-ray—and that we, therefore, should individualize our cases and adapt the treatment to the particular conditions that are to be met.

DR. WILLIAM S. STONE, New York: I am sure that we are all much impressed with the presenta-

tion of the surgical side of the treatment of carcinoma of the uterus by Dr. Peterson. It certainly gives comprehensive review of that part of the subject. As one of the speakers said, we should be encouraged by his statistics. I think that the reference that was made to the comparative statistics of Dr. Bailey should not go without a word of correction. Dr. Peterson's statistics of 40 per cent referred to the cases that did not die at the primary operation, and Dr. Bailey's 10 per cent referred to the first year of his work and had to deal entirely with advanced and inoperable cases. They are not at all comparable.

I was much impressed with the report of Dr. Peterson's work that relates to two points. In his Conclusion 8, he says: If the end results be poor, the burden of proof is upon the radical abdominal operator to show why he did not choose a much safer operative procedure.

Now, here in New York, I am quite sure there would be a good many upon whom the burden of proof in that respect, would rest, and one of his tables gives the reason. In his list of recurrences of the 14 cases, he mentioned there were only five that recurred in the first year. Now, that is contrary to the observations that I have made here in New York. During the past three years I have seen in the neighborhood of 400 cases of cancers of the uterus, and a large percentage of them were recurrences. It is only occasionally that I see a recurrence that didn't appear until after the first year. The vast majority of them recurred in the first few months after operations. I think that is one of the most valuable points Dr. Peterson brought out, showing the result of what skillful, conscientious surgery will do in cases which are properly selected.

In regard to Dr. Burnham's discussion: I think he brought out very clearly the matter in regard to the combination of operation and radium. If I mistake not, he indicated that in the inoperable cases, in which radium had been used and they had been apparently cured, there had been a primary regression so that they then appeared to be operable. He made the distinction from cases that were clearly operable in the beginning. Incomplete surgery undoubtedly does harm rather than good, and if in these cases, which have been previously inoperable, and radium has made them apparently operable, you remove the uterus and don't find any signs of cancer in the uterus, it does not prove anything. They may be apparently cured, but there may be cells that are lying dormant in the parametrium, and, in my judgement, it is best not to operate in such cases. That is not saying surgery should not be combined with radium in other cases that were originally operable.

There is one other point that I cannot allow to pass in regard to Dr. Ward's reference to the leucorrhea appearing after the treatment of fibroid tumors. It is a point which I know Dr.

Burnham has long considered—namely, that in the treatment of fibroids it is well to use heavy filtration in order to cut out the superficial and burning rays, and thus prevent a leucorrhea. Dr. Ward implied that the brass was a more efficient filter than platinum. Brass is less so, than the platinum, but one millimeter of platinum or two millimeters of lead are the strongest filters that we use, and Dr. Ward must look to some other reason for his good fortune in not having leucorrhea follow his applications of radium.

DR. WARD, New York: May I correct an impression of Dr. Stone's? I did not imply that the brass was better. I simply spoke of the silver or platinum capsule holding the radium and outside of that one millimeter of brass, and of the plain capsule containing the radium and then a rubber over that without any filtration. I did not mean that a millimeter of platinum was not a great deal better than brass. We cannot afford the platinum.

DR. LEROY BROWN, New York: I shall confine my remarks to the paper on fibroids and Dr. Pfahler's paper on the treatment with X-ray and radium. Dr. Pfahler in his admirable paper has given us many of the contra-indications in cases which should not be treated with either radium or the X-ray. Following this, however, he has given us such a full report of his excellent results that the contra-indications are lost sight of. I feel we should look carefully into the contra-indications, as also the indications that we may carry away as clear a conception of the surgical objections as of the advantages.

We can sum up Dr. Pfahler's contra-indications in the uncertainty of making a clear-cut abdominal diagnosis. Some two years ago, at a meeting of roentgenologists (I think it was at Battle Creek, was it not, Dr. Pfahler?), a part of the meeting was given over to the treatment of fibroids by X-ray, and excellent results were reported. The admission was made by one of the chief speakers that the difficulty lay in making a clear-cut diagnosis and in ruling out coincident pathological conditions. This is the key of the whole subject; with small fibroids giving hemorrhagic symptoms and uncomplicated by carcinoma and tubo ovarian disease, this method of treatment is of great service. If, however, such a fibroid gives no symptoms either of hemorrhage or pain, and of the presence of which the patient was not aware before the examination was made, it is not a condition requiring any treatment either by surgery or X-ray.

The complaint of pain associated with a fibroid should make the examiner careful of his diagnosis of an uncomplicated tumor, since such a symptom is the result of either changes in the tumor itself or an indication of a coinci-

dent tubo-ovarian disease. Both of these should be treated by surgery and not by X-ray. Any examination of the records of the Woman's Hospital shows that in 1,750 consecutive cases of fibroid tumors operated on, 5 per cent. had necrotic changes, giving rise to pain. We found ovarian disease in 17.6 per cent. of those cases. In other words, practically one in five needed a surgical operation which was for a coincident condition other than that of the fibroid and which could not be reached by radium. This includes adenocystomas; it includes serous cysts; it includes solid tumors of the ovary, and other pathological conditions. In the salpingitis cases associated with this series of fibroids, including the cases of pyosalpinx and tubercular salpingitis, there were 13.2 per cent., or practically one in eight. This is the crux of this line of treatment, the uncertainty of recognizing the extra-pathological conditions when you undertake the treatment of fibroid tumors with X-ray or radium. Dr. Clark limits the treatment of his cases to small tumors, for the reason that those tumors can be more easily mapped out and are less likely to have coincident pathological conditions, since the longer the tumor exists, the greater will be the probability of coincident conditions existing.

Unquestionably, there is a field for radium and there is a field for the X-ray, and unquestionably we can and do save patients from operations by these means, but I believe the limitations should be clear-cut and should be well recognized, and a clear, full diagnosis should be made before the X-ray or the radium is applied.

DR. CURTIS F. BURNAM, Baltimore: I have enjoyed the other papers and the discussions very much. I think that Dr. Peterson ought to have radium in Ann Arbor, and I don't think it will break the State of Michigan to secure radium.

Dr. Bailey and I haven't been talking about vast amounts of radium. We give doses that are attainable with reasonable amounts of radium. That is the first thing, I should say.

DR. ROBERT L. DICKINSON, Brooklyn: How much do you need, about \$12,000 worth?

DR. REUBEN PETERSON, Ann Arbor, Mich.: I have been exceedingly interested in the other papers, perhaps more so than in my own.

I simply reported my results, and those results are valuable from one standpoint in that I have had no radium, and have never used radium. I felt guilty that I didn't have radium, but feel more satisfied after what Dr. Ward has said; for when I hear of such a rich institution situated in the richest city of America only using radium for a year, why even if radium does not get to Ann Arbor, a small town of 15,000 inhabitants, for

another year or two we may not be so guilty after all.

I have been wondering in regard to certain very true statements that Dr. Bailey made about what has been accomplished in the entire number of patients with cancer of the cervix. I only reported cases that have been operated on five years, 47 cases, because, from the surgical standpoint, those are the only cases that interest us. Before that time if they die, they die from recurrences and so on, but the patients that are saved are the ones that really interest us.

Now, how much radium is necessary to save cancer of the cervix patients? Can the radium be obtained by people of limited means, or must we depend upon these massive doses? Now, if massive doses are necessary, it is certainly necessary to keep on with surgery, because only a few centers in comparison with the immense scattering of cancer throughout the country, will be in position to obtain such amounts of radium.

I welcome anything that will encourage me in the thought that cancer can be cured by anything outside of surgery. I hate the abdominal operation for cancer of the uterus more than any other operation. If the cases can be cured by radium I welcome it, but if massive doses are necessary I can not help but think of the innumerable cases of carcinoma of the cervix throughout the country and whether, say, in 500 such cases you would not obtain more cures in the country over by surgery even now.

Take Dr. Burnam's paper: a splendid paper, encouraging, but I cannot tell until I study it in detail how it compares with my results in a small number of cases. I want the same rules to apply to radium that apply to surgery. I want every case hunted up, and if you cannot prove that that case has died from an intercurrent disease I want it counted that the patient has died from cancer. I want to know whether these cases have been operated on five years and other factors in regard to a paper like that that I cannot get from just hearing it read. However, it is immensely encouraging because I believe if we can ever get to the point where we can get rid of the knife in cancer of the cervix, it will be a very happy day, whether by radium, or by the X-ray, or by something else. The primary mortality must always be high with the extended abdominal operation for carcinoma of the cervix, consequently I welcome anything which will do away with the operation.

Very few of my cases have been microscopic diagnoses, i.e., discovered accidentally by routine examination. Most of them have been cases that I thought might be amenable to treatment by the knife, and in the large primary mortality that I have had you can see that I made many mistakes. In some I should have better left the patients alone and could have prolonged their lives by treatment such as the actual cautery. But in so far as it goes, without radium 18 patients are

alive and well, and that is all you can say about such a small number of cases—that at least these people have been saved by the extended operation.

DR. CURTIS F. BURNAM, Baltimore: I spoke of 4 gram hours. If you have 100 milligrams and used it for forty hours in a single dose, properly disposed, that is the treatment with 100 milligrams of radium. It is better, I believe, to have more tubes. It is important to get as wide a distribution over the cervix and to reach as far as possible.

I also think the university clinics and the hospital clinics will all have to come to the emanation method and use more radium, because that permits of getting points which can be buried in the cervix, which is very important. I have seen parametrial conditions high on the pelvic wall that you could reach through the abdomen. Dr. Bailey spoke of it in connection with parametrial vaginal masses.

I think Dr. Peterson's results are quite wonderful—over 40 per cent. of cures in the operable cases, and I am sure that he took many advanced cases, because he was using surgery alone. Probably nearly all of his deaths occurred in the advanced group, and probably a large percentage of his failures, his recurrences also must be greatest in that same group.

I tried to bring out the point that I feel the whole question of treatment of cervical cancer has to be squarely opened up anew, and that we have to accumulate new experiences and new statistics to determine just what is best.

Wertheim died this year. I do not think the Wertheim operation in early cancer of the cervix is a dangerous or difficult operation, or one that is going to be followed by a great mortality. I base this belief on personal experience as well as the experience of my associates in Baltimore. I do think as you approach the borderline and inoperable conditions that it becomes steadily worse and worse.

I mentioned in the main part of my paper that I think we might develop a systematic gland removal, and I think that is important. I have seen a good many cases die from gland metastasis where all local evidence had disappeared.

I recently saw a very interesting and remarkable case. A woman came to me two years ago with an inoperable cancer of the cervix. She was radiated and the condition cleared up apparently, and it is still cleared up. She came back recently for examination and I found a tumor of the left ovary, a perfectly movable left ovary, about the size of a hen's egg. I didn't know what I was dealing with, but advised operation, and did the operation and removed the ovary. It looked like a fibroma of the ovary, but on microscopic sec-

tion it contained a basal cell epithelioma, which I had originally treated in the cervix. There is a combination case, so I feel if Dr. Peterson had radium today in Ann Arbor he would be limiting his operation more to the early cases and would bring us better results, a good deal better results, than his present.

Now, whether radium combined with operation in the very early cases is of advantage or not I am not prepared to say. It should be tried in series. I am pretty sure that in the case of an early lip cancer, if you do a radical lip and a radical neck, you probably would get as good results by operation alone as you would by radiation, or radiation afterwards. I am not prepared to say: it should be worked out, and it can be done.

If I may be permitted to say a word about bleeding in the fibroid situation. I enjoyed Dr. Pfahler's paper very much, and what he says is correct. One should not attempt trans-abdominal radiation with small amounts of radium. You cannot give sufficient dosage. You burn the skin and do not secure results. I feel a gas examination, where it is possible, and a curettage should be made. In every case as careful a gynecological examination should be made as is possible to determine the conditions present. Just the other day I had an adeno-carcinoma of the body of the uterus that almost perfectly simulated uterine fibroid. Of course, I realize that if Dr. Ward or Dr. Broun here in New York would get such a case they would probably diagnose correctly. I do not always do it, however. Even with an anesthetic, dilatation, sounds and everything else I am at times left in the dark, as is shown by a recent case. A young married woman came to me, an army officer's wife, about 28 years old, married two or three years, childless, but anxious to have children. She apparently had a fibroid tumor of the uterus the size of a three months' pregnancy. I gave her gas, examined. The uterine cavity was of normal type, there was normal endometrium, and diagnosis of fibroid was made. I decided to radiate this patient trans-abdominally in order to keep from any possibility of sterilizing. I proceeded to give radiation and while menstruation stopped the tumor did not recede. It did not look like malignancy and I waited. She went home to another city in the South, and while there went to a surgeon who is a friend of mine. He wrote me: "I operated on your fibroid and found a fixed dermoid on anterior surface of the uterus." Now, I could not possibly have diagnosed dermoid in this case. I want to register here a sharp dissent from the views of Dr. John G. Clark and a good many others using radium, and a complete agreement with Dr. Pfahler. It is to this effect, that by radiation huge fibroids can disappear, and

usually do disappear, completely; that these cases of huge fibroids are often the ones associated with anemia and cardio-vascular disease, and it is often that in just this type the radium has its greatest advantage over operative treatment. Finally, I feel that every gynecological clinic in the country should be supplied with adequate amounts of radium to carry out their treatments and investigations, and that if this is done systematically and thoroughly we will know a great deal more about all this matter in a few years, and will undoubtedly bring curative relief to a good many more patients than it is possible to reach now.

DR. EDWARD J. ILL, Newark, N. J.: I have nothing to add to what I have already said in my paper. If I may discuss the other papers I only want to express my appreciation at having had a chance to hear so excellent a paper as that read by Dr. Peterson. It gives one renewed courage to operate on cases of cancer of the cervix.

Dr. Burnam has been particular to tell us that a clean-cut diagnosis of fibroids is an important consideration in their treatment by radium. We have seen several cases fail because an operation showed that the tumor was outside of the uterus. These cases had been treated by good men. There is no question of the wonderful results produced by radium. We have used radium ourselves for some time and can testify to this. The contra-indications will have to be learned and time will teach the avoidance of accidents. Nevertheless there will always be some cases that will need surgical treatment. We have not heard much lately of the evil effects of radium on the ovaries. Complete destruction of the ovaries would be a serious matter. Women need their ovarian secretion.

DR. GEORGE E. PFAHLER, Philadelphia: I think there is nothing in the discussion that is contradictory to the contents of my paper, if you read it all.

I surely feel, as you all do, that the first and most important thing is a careful diagnosis, and this should be made by a gynecologist. Very rarely is it that a radio-therapeutist is a gynecologist, and I am not pretending to be one. The patients that come to me come from the gynecologist. Therefore, you can see in the majority of instances the diagnosable complications have been eliminated, and so they should be; and I think if Roentgentherapy and radio-therapy is applied by a skillful radio-therapeutist in conjunction with a skillful gynecologist, there are not going to be very many mistakes made, and I think that is one thing we should keep in mind, and if we follow such rules we won't make many mistakes.

SPECIAL POINTS IN THE SURGERY OF THE GALL-BLADDER AND DUCTS.*

By G. W. CRILE, M.D.,

CLEVELAND, OHIO.

IN the experience of my associates and myself in 1,325 operations on the gall-bladder and ducts the following problems have arisen:

- (a) How may increased certainty as to diagnosis be established?
- (b) How can the risk due to pathologic hemorrhage in jaundiced cases be minimized?
- (c) What is the incision of choice?
- (d) What is the most efficient method of drainage after gall-bladder operations—especially after cholecystostomy?
- (e) When shall the common duct be sutured? When drained?
- (f) What criteria shall determine whether cholecystostomy or cholecystectomy shall be performed?

Pathologic Hemorrhage.—The minimizing of the risk due to pathologic hemorrhage is readily met, for it is almost specifically controlled by the transfusion of blood.

The Incision.—As a rule the best exposure in common duct operations is secured, not by a vertical incision, but by an incision that parallels the costal border dividing the muscles obliquely. This gives a direct and wide exposure of the liver, gall-bladder and ducts; moreover, it has one of the advantages of Mayo's transverse incision in ventral hernia, i.e., it does not divide so many nerve fibers, and it provides a greater security against post-operative hernia.

Of prime importance is the length of the incision. The incision must be sufficient to secure an absolute and adequate exposure of the operative field.

Drainage after Gall-bladder Operations.—In cholecystostomy there is no special problem in drainage; but in cholecystectomy the method and position of drainage is open to question. It is an axiom that the best drainage is dependent drainage which is frequently best secured through a counter incision at the bottom of Morrison's pouch. In fact, in cholecystectomy, the question of drainage is paramount, for if it is not adequate, a sub-phrenic abscess may be established. If adequate dependent drainage is not established through Morrison's pouch, then it must be ample through the abdominal incision, so that by no chance will there be an accumulation of fluid at any one point which may be dispersed by the respiratory movements. In fulminant acute cases of cholecystitis, the only immediate procedure as

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a rule should be the establishment of gall-bladder drainage. It is very desirable to carry the acute gall-bladder over to the subacute stage before the final operation. After the acute symptoms have subsided and the temperature has remained normal for a period and the patient's general condition has become stabilized, then a cholecystectomy may be performed.

In the preliminary operation in a grave risk, the adhesions should be separated only sufficiently to meet the absolute requirements of drainage. In these fulminant cases as soon as the gall-bladder is opened a tube is inserted and nothing more is done surgically. Around this tube a quantity of iodoform gauze, well wrung out, is lightly packed, and beyond this an abundance of gauze is inserted around all the sides of the short abdominal incision. No stitches are used provided the incision is short and the gauze packing adequate.

Suture or Drainage of the Common Duct.—After the removal of a stone from the common duct, provided bile drainage through the ampulla or the gall-bladder is assured, the entire duct lumen may be closed with fine chromic gut, just as wounds of the intestine are closed. On the other hand, drainage of the common duct is required:

- (1) If there has been a stone in the ampulla;
- (2) If the duct mucosa has been so injured as to cause hemorrhage;
- (3) If there is a probability of post-operative closure of the duct by swelling.

In cases in which drainage of the duct is not required and the duct is sutured, a drain is placed near, but not against, the line of suture.

Cholecystectomy vs. Cholecystostomy.—An examination of the post-operative course of any series in which drainage alone is used routinely in all gall-bladders, irrespective of the condition of the gall-bladder and the cystic duct, will show in some cases a temporary quiescent period followed by fever and pain, and a sense of pressure and burning in the scar, which has reddened, become swollen and tender and finally opened to allow the escape of muco-pus or bile or both. The symptoms then disappear and the wound closes, but the same cycle tends to reappear after a longer or shorter period.

It does not satisfy or content the victim of this cyclic gall-bladder to assure him that this is a safety valve, that little or no danger attends it, and that some day it may get well.

Such cases present to us the following definite clinical problems:—Can it be determined at the time of operation whether a given case will eventuate in this malevolent cycle? Is cholecystectomy followed by any unfavorable after-effects? Will the mortality rate of cholecystectomy be greater than that of cholecystostomy in the cases

that will be followed by the cycle of cholecystitis, eruption, quiescence?

We find that from the local conditions one can with accuracy forecast the clinical behavior of the gall-bladder and the cystic duct. We are bound to admit that the gall-bladder has a function; and that in the absence of the gall-bladder the common duct is dilated; that a dilated common duct partly compensates for the absence of the gall-bladder by storing bile; and that the abnormal storage of bile in the common duct predisposes somewhat to the formation of stone in the common duct.

Conditions which Point to the Cholecystitis Obstruction Cycle.—Experience has taught that if the mucous membrane of the gall-bladder is gangrenous; if there is chronic infection of the gall-bladder; if there is a stone embedded in the cystic duct; if the wall of the cystic duct is thickened; if the wall of the gall-bladder is thickened by scar tissue as a reaction to infection, then mere drainage of the gall-bladder, usually, though by no means always, will be followed by recurrent obstruction and infection and in these cases cholecystectomy is recommended. On the other hand, if the gall-bladder has approximately normal walls, and if the cystic duct is approximately normal, then no matter what the size or the number of stones, if the operation is performed with due care there will be rarely if ever a post-operative pathologic cycle.

In cholecystectomy the following points may be emphasized:—The gall-bladder should be exposed by an ample incision so that there is free access to the base of the gall-bladder; the freeing and separation of tissue should be made by sharp dissection, care being taken not to injure the liver even slightly, so that oozing of blood and bile as well as infection may be avoided. The entire gall-bladder should be freed from its attachment so that ample opportunity may be given for determining the exact place at which the gall-bladder ends and the cystic duct begins, the division being made just proximal to this point. The cystic artery should be isolated and tied separately.

It is well to emphasize further the necessity of most careful determination of the exact point at which the division should be made between the gall-bladder and the cystic duct. If the division be made too high, so that a small part of the gall-bladder is left, there may result, as I have seen, the formation of a diminutive gall-bladder, with distinct cholecystitis, accompanied by pus formation and the formation of small stones. If, on the other hand, the cystic duct be divided so near its junction with the common duct that the lumen of the latter is first narrowed by the pressure of the ligature, then totally occluded by swelling, there may arise an embarrassing temporary obstruction to the flow of bile. That there may be a correct division, therefore, it is essential to have

ample room for work, and to maintain a clear, blood-free anatomical field.

The clinical results of cholecystectomy in many cases of pathologic gall-bladder are clinically as much better than cholecystostomy as nephrectomy of a pus-riddled kidney is better than a nephrotomy. The convalescence after cholecystectomy is usually as uneventful as is convalescence after a salpingectomy for chronic suppuration.

In cholecystectomy it has been argued that the surgeon would be at a great disadvantage should there be later a necessity for operating for stone in the common duct. To this objection one may reply that the common duct occupies a fixed position with definite land-marks, and that if a bloodless anatomical field be maintained by sharp dissection, the duct will be found easily, even though it is buried as deeply as possible under overlying adherent structures.

In stricture of the common duct we have found that the anastomosis between the gall-bladder and the duodenum is the point of election.

Vagaries of Gall Stones.—I have seen gall stones ulcerate through the abdominal wall; wander into the liver; penetrate through the small intestine; into the colon; into the stomach; and in one instance a huge stone penetrated into the small intestine causing intestinal obstruction.

The Magnesium Sulphate Reflex as an Aid to Diagnosis.—The magnesium sulphate test was first suggested by Meltzer and its practical details worked out by Lyons (Lyons B.B.V., J.A.M.A. LXXIII, 980-982). This test is based on the fact that contact of the duodenal mucosa with a partly saturated solution of magnesium sulphate causes a relaxation of the sphincter of Oddi, and the subsequent discharge of sharply differentiated types of bile, always three in number in normal cases, which are believed to come in successive stages from the common duct, the gall-bladder and the liver itself.

The technic as it has been employed at Lakeside Hospital is as follows:—The patient is given a duodenal tube to swallow and the stomach contents are aspirated for a routine examination. When this is done, the patient is turned on the right side, and a pillow placed under the hips. He is then instructed to massage the epigastric region from the left to the right until further instructions are given. To relax the pyloric sphincter and thus facilitate entrance to the duodenum, from 20 to 30 mm. of benzyl benzoate are given immediately after the tube is swallowed.

When it is ascertained that the duodenum has been reached, usually in from three quarters of an hour to an hour, a solution of 60 cc. of a 25 per cent. solution of magnesium sulphate is injected through the tube into the duodenum. The tube is then clamped and after three or four minutes preparation is made to collect the specimens of bile. On removing the clamp from the tube a flow of fluid is expected, usually with no

preparatory aspiration. This back flow consists of a drip of

(1) A return of part of the magnesium sulphate injected into the duodenum. This changes to

(2) the "common duct phase"—bile of the consistency of a thin syrup. After 5 to 10 cc. of bile of this consistency have been cleared a definite change is noted which indicates

(3) the "gall-bladder phase"—bile of a thicker, more ropy consistency, and of a dark color, the amount of which may vary from 25 to 100 cc. The character again changes to

(4) the "liver phase"—in which the bile is of a lighter, straw color, and much more fluid in consistency.

These changes are quite definite and abrupt. As a routine measure no aspiration is needed, and the outflow of bile occurs spontaneously. When the flow of bile ceases, however, it is always advisable to aspirate gently to see if the flow can again be started. When flowing spontaneously the bile emerges in a series of drops which ebb and flow like the discharge from the ureter.

Although our experience thus far has been limited, approximately thirty observations have been made—there are certain characteristics of the gastric and duodenal contents which we have found to be fairly constantly present in gall-bladder disease.

(1) In many cases of cholelithiasis the gastric fluid is bile stained. When the fluid is clear, it does not mean, however, that gall-bladder disease does not exist, and more than half of the cases of cholelithiasis have a mild or moderate hyperacidity. The duodenal contents normally are clear and faintly bile tinged. A cloudy fluid from the duodenum means nothing if it is intermittently cloudy or acid, or if upon microscopical examination it is found to contain stomach elements. In other words, one must be sure that the collected fluid is true duodenal content and not fluid from the stomach which has just spurted through the pylorus. When the duodenal fluid is constantly cloudy and alkaline, and contains pus cells, then inflammation of the duodenum or biliary tract is to be suspected.

(2) Of the first bile which is collected after injection of the sulphate solution, i.e., "common-duct bile," little can be said. Since starting this series we have had no case of total obstruction of the ductus choledochus and therefore we have always obtained bile of some sort. In one case when the duodenal contents were cloudy and contained pus the bile which followed injection of the magnesium sulphate was clear and contained only a few cells. We believed in this case that we were dealing with a catarrhal jaundice with no involvement of the biliary tract, and the clinical picture strengthened this belief.

(3) When the "gall-bladder phase" is absent, we have concluded that the cystic duct is ob-

structed by adhesions, by stone, or by some other cause. In cholelithiasis when the cystic duct is patent, the bile from the gall-bladder is often more viscid and occasionally is cloudy and contains pus cells. A cloudiness due to precipitated bile salts often occurs in normal bile when it has stood for some time. The color of the bile from the gall-bladder varies from almost black to a light brown, but is usually darker than the bile from the common or hepatic ducts. We have noted nothing peculiar in the color of bile from pathological gall-bladders. Usually the bile from a normal gall-bladder is prompt in making its appearance, coming in from two to six minutes after the injection of the magnesium sulphate solution. A greatly retarded appearance of the "gall-bladder phase" occurred in two cases in which gall stones were found at the operation. Occasionally too, we find an unusually small amount (10 to 30 cc.) of gall-bladder bile in cholelithiasis.

(4) Thus far the hepatic bile has served us only as a means of contrast with that from the gall-bladder.

In eight cases we have made the diagnosis of obstruction of the cystic duct previous to operation by the magnesium sulphate test. These eight cases all showed an obstruction of the cystic duct at the time of operation. In one case in which it was not necessary to remove the gall-bladder, we had the test repeated and secured a "three-phase test" following the operation, while before the operation we had been able to obtain only a "two-phase test," the "gall-bladder phase" being absent.

From our experience to date, therefore, we feel that this test is well worth while, and that it does give us additional evidence of the pathology of the gall-bladder.

Prevention of the so-called Liver Shock after Operations on Patients Debilitated by Infection and Jaundice in Common Duct Obstructions.—This common cause of death is due to a failure of the liver cells. Its prevention may be in part secured by avoiding the causes of liver cell depression in operation, and in part by the early use of fluids and especially of heat.

The common causes of "liver shock" are ether anesthesia, sub-oxidation from deep and prolonged anesthesia, trauma, and low blood pressure. The use of a local anesthetic coupled with light gas and oxygen anesthesia, minimum trauma, secured by an ample incision, by sharp knife dissection, and by as brief an operation as is consistent with good surgery, blood transfusion if the blood pressure is low, and morphin in case of pain, obviate or minimize these causes. In addition the activity of the liver cells is increased by the application of local heat, and by abundant water—to this end large hot packs are used and adequate water equilibrium is established before and immediately after operation and are continued through the acute post-operative phase.

Medical Society of the State of New York

MEETING OF THE COUNCIL

The meeting of the Council of the Medical Society of the State of New York was held in the State Society rooms, 17 West 43rd Street, on Thursday, March 25th, 1920. Dr. J. Richard Kevin, President; Dr. Edward Livingston Hunt, Secretary.

The meeting was called to order by the President, and on roll call the following answered to their names: Drs. J. Richard Kevin, Grant C. Madill, W. Meddaugh Dunning, Wesley T. Mulligan, William H. Purdy, Edward Livingston Hunt, Harlow Brooks, E. Eliot Harris, Dwight H. Murray, Samuel Lloyd, Henry Lyle Winter, Joshua M. Van Cott, Frederic E. Sondern, Luther Emerick, T. Avery Rogers, Harry R. Trick.

A quorum being present, Dr. Kevin announced the meeting open for business.

The Secretary read the minutes of the last meeting.

Moved, seconded and carried that they be approved.

Dr. Winter requested that the following correction be made in his report as Chairman of the Committee on Medical Economics, by changing the name of the Smith Bill to the Cotillo Bill.

The President extended an invitation to the Society to hold its next annual meeting in Brooklyn.

Moved that the next annual meeting be held in Brooklyn; seconded and carried.

Moved that action on the date of the next annual meeting be left until after the meeting of the American Medical Association; seconded and carried.

Moved that the appointment of an Editor for the NEW YORK STATE JOURNAL OF MEDICINE be referred to the Committee on Publication with power; seconded and carried.

Moved that the present committees be continued until the May meeting of the Council; seconded and carried.

Moved that the President consider the appointment of the new committees and recommend names of members for election at the May meeting of the Council; seconded and carried.

Moved that the appointment of the Chairman of the Committee on Arrangements be left to the President; seconded and carried.

Moved that the appointment of the member at large of the Committee on Scientific Work be left to the President; seconded and carried.

Moved that action on the appointment of an executive secretary be postponed until the May meeting of the Council; seconded and carried.

Moved that the President appoint a committee to consider with him the appointment of an executive secretary and report the recommendations to the Council at the next meeting; seconded and carried.

Moved that the Committee on Finance authorize such expenditures as it considers advisable and that the officers, chairmen, and members of committees incur no expenses on behalf of the Society except railroad fares, without the approval of the committee; seconded and carried.

Moved that in order to encourage increase in membership in the State Society, all members who are elected to membership in the State Society, between October 1, 1920, and December 31, 1920, and who shall pay during that period their State assessment, may have the same credited to 1921, provided that they request it. All whose assessments are so credited shall be entitled to malpractice defense from the date of their election, but shall not be entitled to receive the Journal nor Directory for 1920. State assessments so credited shall be immediately forwarded by the County Treasurer to the State Treasurer; seconded and carried.

Moved that officers and members of committees upon presentation of proper vouchers may have their railroad fares paid for attending regularly called meetings,

provided the bills are presented within sixty days after they have been incurred. Otherwise they will not be paid; seconded and carried.

Moved that the Delegates to the American Medical Association may have their railroad fares paid upon presentation of proper vouchers on condition that they attend all meetings of the House of Delegates. Bills for such expenses must be presented within sixty days after they have been incurred. Otherwise they will not be paid; seconded and carried.

Moved that the Counsel shall not be permitted to take criminal cases without the consent of the Council or a Committee of the Council; seconded and carried.

Moved that the President and the Speaker of the House of Delegates constitute a permanent Committee of the Council, to act as advisers to the Counsel, and decide whether he should or should not undertake the defense of criminal cases of members of the State Society or other physicians practising in the State of New York, the President to have the privilege of appointing other members to act for the committee if the case occurs at a distance from New York City.

Moved that the resolution be amended so that the Secretary act as a member of the committee.

Original resolution with amendment; seconded and carried.

Moved that a new contract be made with Mr. Lewis as Counsel of the Medical Society of the State of New York, and that the resolution appointing a committee to consist of the President, Speaker of the House of Delegates and the Secretary of the State Society be incorporated in the contract; seconded and carried.

Moved that in compliance with the request received from Mr. Lewis, that his salary be raised to \$12,000 a year beginning with June 1, 1920, and ending with April 1, 1921; seconded and carried.

There being no further business, the meeting adjourned at 6 P. M.

EDWARD LIVINGSTON HUNT,
Secretary.

MEETING OF THE COUNCIL

The meeting of the Council of the Medical Society of the State of New York was held in the State Society rooms, 17 West 43rd Street, on Saturday afternoon, May 22nd, 1920, Dr. J. Richard Kevin, President; Dr. Edward Livingston Hunt, Secretary.

The meeting was called to order by the President, and on roll call the following answered to their names: Drs. J. Richard Kevin, E. Eliot Harris, Dwight H. Murray, Wesley T. Mulligan, William H. Purdy, Edward Livingston Hunt, Harlow Brooks, Joseph B. Hulett, Frederick C. Holden, Luther Emerick, T. Avery Rogers, William D. Alsever, Leon M. Kysor, Owen E. Jones, Harry R. Trick, Samuel Lloyd, James F. Rooney, Henry Lyle Winter, Joshua M. Van Cott, and Frederic E. Sondern.

A quorum being present, Dr. Kevin announced the meeting open for business.

The Secretary read a letter from Dr. Campbell, Chairman of the Committee on Arrangements, expressing his regrets at his inability to be present.

Dr. Kevin: If there is no objection, Dr. Campbell will be excused.

The Secretary read the minutes of the last meeting. Moved, that the minutes be approved; seconded and carried.

Dr. Rooney, Chairman of the Committee on Legislation, presented the following as members of his Committee for approval by the Council; Drs. James N. Vander Veer, and Henry S. Stark.

Moved, seconded and carried that they be approved.

Moved that the Council direct the Chairman of the Committee on Legislation to introduce the Medical Registration Bill at the next session; seconded and carried.

Moved that in addition a propaganda be also started through our own Medical Journal, and that it be carried on with vim; seconded and carried.

Dr. Joshua M. Van Cott, Chairman of the Committee on Public Health and Medical Education, presented the following as members of his Committee for approval by the Council: Drs. Allen A. Jones, Charles Stover, William P. Pool, John M. Swan, Luzerne Coville, Henry E. Clarke, Halbert S. Steensland, and Frank Overton.

It was moved, seconded and carried, that they be approved.

Dr. Sondern, Chairman of the Committee on Medical Research, presented the following as members of his Committee for approval by the Council: Drs. Samuel A. Brown, Charles L. Dana, W. Gilman Thompson, Alvah H. Doty, Haven Emerson, James Ewing, Simon Flexner, Karl M. Vogel, William P. Healy, Alfred F. Hess, Samuel W. Lambert, William H. Park, James E. Sadler, H. Ernest Schmid, J. Bentley Squier, John S. Thacher, S. W. S. Toms, Henry Lyle Winter, Francis Carter Wood, Elias H. Bartley, William Francis Campbell, J. Richard Kevin, John C. MacEvitt, Frank Overton, Joshua M. Van Cott, Herman C. Gordinier, Albert Vander Veer, Sherwood V. Whitbeck, George F. Comstock, Grant C. Madill, Charles Stover, T. Wood Clarke, Charles B. Forsyth, Hersey G. Locke, A. Walter Suiter, Arthur W. Booth, Luzerne Coville, R. Paul Higgins, Robert M. Elliott, Wesley T. Mulligan, Ethan A. Nevin, G. Kirby Collier, Harvey R. Gaylord, Matthew D. Mann, Nelson G. Richmond, Charles G. Stockton, Bernard F. Schreiner, and Herbert U. Williams.

It was moved, seconded and carried that they be approved.

Dr. Winter, Chairman of the Committee on Medical Economics, presented the following as members of his Committee for approval by the Council: Drs. George W. Kosmak, Arthur F. Chace, Edwin MacD. Stanton, and Henry G. Webster.

It was moved, seconded and carried that they be approved.

Moved that the following be approved as members of the Committee on By-Laws of the Council: Drs. E. Eliot Harris, Dwight H. Murray, and Edward Livingston Hunt.

Seconded and carried that they be approved.

Moved that the following be approved as members of the Committee on Finance of the Council: Drs. Henry Lyle Winter, Harlow Brooks, and Edward Livingston Hunt.

Seconded and carried that they be approved.

Moved that the following be approved as members of the Committee on Publication of the Council: Drs. Frederic E. Sondern, Seth M. Milliken, W. Meddaugh Dunning, Edward Livingston Hunt, and Joshua M. Van Cott.

Seconded and carried that they be approved.

Dr. Brooks, Treasurer, read the following report:

Estimated Expenses June 1st to December 31st, ...	\$38,206
Balance in Bank May 31st, after Counsel's salary and bill for May JOURNAL have been paid, about	\$852.74
Estimated Receipts,* June 1st to December 31st	33,783.26
	34,636

Excess of Expenses over Receipts.. \$ 3,570

At least \$4,000 of these receipts will not be collected until after the middle of December.

It was moved, seconded and carried that the report be approved.

The Secretary read the following letter from Dr. MacEvitt:

May 18, 1920.

DEAR DR. HUNT:

It is with extreme regret that I feel compelled to relinquish my editorship of the New York State Journal of Medicine. Kindly present this fact at the next meeting of the Council.

My associations with the JOURNAL and the Committee on Publication have been so cordial and pleasant that this parting leaves no light wound.

Most sincerely yours,

JOHN C. MACEVITT.

It was moved, seconded and carried, that Dr. MacEvitt's resignation be accepted.

Moved that a suitable resolution be drawn up and sent to Dr. MacEvitt, expressing the Council's gratitude and appreciation of the Doctor's long years of service; seconded and carried.

The President appointed Drs. Frederic E. Sondern and Joshua M. Van Cott, a Committee of Two, to draw up these resolutions.

The President presented the name of Dr. William Francis Campbell, as Chairman of the Committee on Arrangements.

Moved, seconded and carried that he be approved.

The President also presented the name of Dr. Russell S. Fowler, as a member at large of the Committee on Scientific Work.

Moved, seconded and carried that he be approved.

Moved that the next Annual Meeting of the State Society be held on the 3d of May, 1921; seconded and carried.

The following communication was read from Francis G. Caffey, United States Attorney:

May 20, 1920.

DR. J. RICHARD KEVIN, President.

Sir:

Receipt is acknowledged of your letter of May 12, 1920, advising me that Mr. James Lewis, attorney for the Medical Society of the State of New York, appeared as Counsel for Dr. Hoyt only in his private capacity as an attorney.

For your own further information, I beg to advise you that Mr. Lewis acted as Chief Trial Counsel for Dr. Hoyt, who was convicted of violations of the Harrison Law on thirteen different counts. Dr. Hoyt was sentenced on May 18, 1920, to four years at Atlanta on each count to run concurrently.

Respectfully,

FRANCIS G. CAFFEY,
United States Attorney.

Moved that the matter mentioned in the communication be taken up by the Council.

Moved that the Speaker of the House of Delegates, the Chairman of the Committee on Legislation, the Treasurer and Dr. Sondern, be appointed a Committee of Four to retire and bring back their best advice to the Council relative to the Counsel; seconded and carried.

The Committee during its deliberation, requested the President to appoint a fifth member. The Secretary was appointed.

After a recess of ten minutes, the Council readjourned, and the Committee presented the following:

Your Special Committee unanimously recommends that the Council employ legal counsel to investigate, determine and advise the nature of the legal relationship existing at present between the legal counsel of the Medical Society of the State of New York, and the Society. (Signed) E. Eliot Harris, James F. Rooney, Edward Livingston Hunt, Frederic E. Sondern, and Harlow Brooks.

Moved that the report be adopted; second and carried.

Moved that the President appoint a Committee of

Five of which he shall be Chairman, to select legal counsel for the purpose mentioned in the above Committee's recommendation, the legal counsel to report to the Committee of Five, and when the Committee considers the report complete, a special meeting of the Council shall be called for its presentation and action. The special legal counsel shall be present at the special meeting of the Council.

Seconded and carried.

The President appointed as members of this Committee of Five: J. Richard Kevin, Harlow Brooks, Edward Livingston Hunt, Frederic E. Sondern, and James F. Rooney.

Moved that a Committee be appointed to consist of the President as Chairman, the Treasurer of the Society, Secretary of the Society, Chairman of the Committee on Medical Economics, Chairman of the Committee on Legislation, and the Speaker of the House of Delegates, to take up the question of the Executive Secretary.

Seconded and carried.

The Secretary presented the names of Drs. Jerome Walker and Lewis D. Mason, both of Brooklyn, as applicants for retired membership.

Moved that they be placed on the list of retired members; seconded and carried.

Moved that the Council rescind its action taken at the previous meeting in increasing the salary of the Counsel to the sum of \$3,000 per annum.

Moved as an amendment that the entire resolutions as they appear upon the minutes relating to the making of a new contract with Mr. Lewis, and the raising of his salary be rescinded.

The original motion as amended was seconded and carried.

Dr. Hunt, Secretary, read the following correction for the minutes of the House of Delegates as published in the April issue of the JOURNAL, by making the resolution read "Physicians refuse to censure the Counsel. Seconded and Carried." instead of as printed in the minutes "Physicians refuse to censure a member of the Medical Profession. Seconded and lost."

Dr. Harris: This subject should be taken up with the House of Delegates and not with the Council.

The following letter from the Council on Medical Education and Hospitals of the American Medical Association was read by the Secretary:

May 15, 1920.

DEAR DR. HUNT:

The work for the betterment of hospital service is extremely broad and will require continuous effort, so that the Hospital Committee in each State should be made permanent. Would it not be well to have your committeemen appointed so that the term of office of one member will expire each year and also to make provision for the prompt filling of all vacancies that may occur through the death, resignation or removal of any member?

You doubtless recognize the importance of retaining on this committee men who are not only active but who also are in position to prepare the most unbiased and reliable reports in regard to the hospitals of the State.

Appreciating your co-operation, we are,

Very sincerely yours,

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Per N. P. COLWELL, Secretary.

Moved that this communication be referred to the President with power to act; seconded and carried.

There being no further business, the meeting adjourned at 4:45.

EDWARD LIVINGSTON HUNT,
Secretary.

MEETING OF THE COUNCIL

A special meeting of the Council of the Medical Society of the State of New York was held in the State Society Rooms, 17 West 43rd Street, on Wednesday evening, June 16, 1920. Dr. J. Richard Kevin, President; Dr. Edward Livingston Hunt, Secretary.

The meeting was called to order by the President, and on roll call the following answered to their names: Drs. J. Richard Kevin, E. Eliot Harris, Dwight H. Murray, W. Meddaugh Dunning, William H. Purdy, Edward Livingston Hunt, Harlow Brooks, Luther Emerick, T. Avery Rogers, William D. Alsever, Leon M. Kysor, Frederic E. Sondern, and William Francis Campbell.

A quorum being present the President declared the meeting open for business.

The President stated that the meeting was called to consider the report of the Special Committee of Five on Counsel, which report will be presented by Mr. George W. Whiteside, Special Counsel for the Committee.

The Committee presented through Mr. Whiteside its report, in which the documentary evidence of Mr. Lewis' employment as counsel of this Society from the year 1905 was recited, which documentary evidence is on file with the secretary of the Society. The Committee reported that from such evidence it appeared that Mr. Lewis was employed by the year and that the law would construe an employment of him by the Society until the next meeting of the House of Delegates. The Committee further reported that despite this fact "the law is well settled that a client has a right to discharge his attorney at any time, either with or without cause. . . ." and cited to sustain this finding, cases decided by the Court of Appeals and the Appellate Division of this State, and accordingly found "that despite the fact that there is a contract implied from all the circumstances before us, between Mr. Lewis and the Society, it is one which the Society can terminate at its pleasure with or without cause and without rendering itself liable for damages therefor."

Concerning the relationship of Mr. Lewis to Daniel J. Hoyt, M.D., as attorney, the Committee reported as follows:

"Daniel J. Hoyt, M.D., was indicted by the Federal Grand Jury in New York City, on four indictments covering transactions between August 2, 1917, and February 3, 1920, containing in all thirty-nine counts, each count being a separate transaction. The first indictment, embodying two counts, need not be considered, as it was dismissed at the end of the Government's case. The second, third, and fourth indictments charge that the defendant, Hoyt, 'did wilfully and feloniously and not in the course of his professional practice only, sell, barter, dispense and distribute to persons named, a certain quantity of a derivative of opium, to wit, diacetyl morphine (heroin) hydrochloride, the said sale, barter and distribution by the said Daniel J. Hoyt was not made in pursuance of a written order from the person to whom the said heroin was sold,' etc. Upon thirteen counts of this character, the defendant was convicted, and they covered the distribution of heroin in each instance to persons and in quantities as follows:

J. B. Williams.....	less than	1 oz.
Fred Brown	48	grains
Esther Friedman	36	"
Paul S. Whitaker	63	"
J. B. Williams	154	"
J. B. Williams	210	"
J. B. Williams	37	"
Paul S. Whitaker	56	"
Esther Neuman	22	"
Esther Neuman	28	"
Albert Dolan	30	"
Albert Dolan	58	"
Albert Dolan	34	"

The Committee further reported concerning this transaction that on March 25, 1920, after the meeting of the Council, Mr. Lewis called the president on the telephone and asked him what action had been taken in respect to Mr. Lewis' participation in the defense of those indicted for violating the Harrison Law; that the president informed Mr. Lewis that a resolution had been passed requiring that Mr. Lewis receive permission from the Society through a Sub-Committee before undertaking the defense of any physician indicted for crime, particularly those that may be indicted under the Harrison Law. Upon that occasion Mr. Lewis expressed his satisfaction and consent to those terms but did not at that time disclose or make known to the Council that he either had been retained or was thereafter to undertake the defense of Dr. Daniel J. Hoyt in the Federal Court in this city, for violating the Harrison Narcotic Law. Thereafter, in May, 1920, despite the aforesaid promises, Mr. Lewis acted as chief counsel in the defense of Dr. Hoyt.

The Committee further reported that under the Constitution of the Society, the House of Delegates is the legislative body and the Council is the executive body of the Society. The legislative body is one which makes or enacts laws, the executive body is one which carries the laws into effect, or secures their due performance. If the legislative branch grants power to employ counsel, the choice of counsel, and the execution of the contract with such counsel would rest entirely with the executive body; likewise the cancellation of such a contract with any individual with whom such contract had theretofore been made and the appointment of a successor would be within the power of the executive body.

Following the reading of the Committee's report, Mr. Lewis appeared before the Council, and having theretofore been advised of the full report of the said Special Committee he was given an opportunity to make a statement concerning this matter. Mr. Lewis in substance stated that he had no recollection of having been informed by Dr. Kevin, President of the Society, on March 25, 1920, after the meeting of the Council, of its action in requiring that permission should be obtained by the counsel of the Society before he should undertake the defense of any physicians charged with crime; that he had been retained to defend Dr. Hoyt a considerable time prior to March 25, 1920, and was within his rights in proceeding with the trial in May, 1920, and that he intended thereby no discourtesy to the Council. It was stated further to Mr. Lewis by the president, that said resolutions were passed on March 25, 1920, after Mr. Lewis' personal appearance before the Council and upon Mr. Lewis' recommendation that a resolution of this tenor should be passed.

Mr. Lewis having retired, it was moved that Mr. Lewis' services be discontinued after July 1st. Seconded.

Motion was lost by vote of nine to two, the president not voting.

Moved that the Special Committee of Five be continued to bring in some constructive program for the reorganization of the legal department of the Medical Society of the State of New York, and to report at the next meeting of the Council; seconded and carried.

Moved that the Special Committee of Five be empowered to employ legal counsel for such Committee; seconded and carried.

There being no further business, the meeting adjourned at 12:15 A. M.

EDWARD LIVINGSTON HUNT,
Secretary.

MEETING OF THE COUNCIL

A special meeting of the Council of the Medical Society of the State of New York was held in the State Society rooms, 17 West 43d Street, on Friday afternoon, September 3, 1920, Dr. J. Richard Kevin, President; Dr. Edward Livingston Hunt, Secretary.

The meeting was called to order by the President and on roll call the following answered to their names: Drs. J. Richard Kevin, Grant C. Madill, E. Eliot Harris, Dwight H. Murray, William H. Purdy, Edward Livingston Hunt, Luther Emerick, T. Avery Rogers, Leon M. Kysor, Owen E. Jones, Harry R. Trick, Samuel Lloyd, Henry Lyle Winter, and William Francis Campbell.

A quorum being present, Dr. Kevin announced the meeting open for business.

Letters and telegrams were read from Drs. James F. Rooney, W. Meddaugh Dunning, Joshua M. Van Cott and Joseph B. Hulett, regretting their inability to be present.

The Secretary read the following letters:

40 Exchange Place, N. Y.
July 26, 1920.

EDWARD LIVINGSTON HUNT, Secretary.
Medical Society of the State of New York,

MY DEAR DOCTOR:

The Council having by resolution in effect refused to advance my salary from \$9,000 to \$12,000, necessitated by the general advance of everything connected with the conduct of my office as your legal representative, I am very reluctantly and regretfully compelled to resign my position.

The severance of relations of twenty years, which have been for the most part delightful, are to be remembered with great satisfaction and I regret to retire more than you can imagine.

It would seem imperative that the House of Delegates should convene or that the Council should meet at once to select my successor, because it is only during this Court recess period that a readjustment can safely be made.

This resignation will take effect September 1st, 1920, which should afford ample time to make the change.

Faithfully yours,

JAMES TAYLOR LEWIS,
Counsel.

August 7, 1920.

JAMES TAYLOR LEWIS, ESQ.,
New York, N. Y.

DEAR MR. LEWIS:

As President and Executive Officer of the Medical Society of the State of New York, with personal regret, your resignation is hereby accepted.

I am forwarding to Mr. Whiteside his temporary appointment to succeed you as Counsel to the Medical Society of the State of New York pending the regular meeting of the Council.

At your request, your resignation takes effect September 1st, 1920. On that date, please transfer all business of the State Society to Mr. Whiteside.

With warm personal regards, believe me, I am

Very sincerely yours,

J. RICHARD KEVIN, President,
Medical Society of the State of New York.

August 19, 1920.

DR. J. RICHARD KEVIN, President,
Medical Society of the State of New York.

MY DEAR DOCTOR:

I have your letter of August 7th, 1920, which was forwarded to me and purports to be an acceptance of my resignation.

This is the first intimation I have had that my resignation had been received.

I am very sorry to advise you that I am of the opinion that you have no authority to accept my resignation, nor have you any authority to appoint any counsel in my place, temporarily or otherwise. That prerogative rests entirely with the House of Delegates or with the Council, and you should now, as you should have done immediately on receipt of my resignation, call the Council together for its action thereon.

All the business of the State Society which is in my hands relates to my defense of various members of it who are sued for malpractice, and my relationship to them, and each of them, is such that I respectfully decline to turn over any papers to any attorney until my resignation has been properly acted upon and the new counsel has been legally and properly appointed in my place to receive them.

Very respectfully yours,

JAMES TAYLOR LEWIS,
Counsel.

The President stated that before accepting Mr. Lewis' resignation and appointing Mr. Whiteside, that he had sent a letter to every member of the Council in regard to the appointment of Mr. Whiteside, with the following result: 19 members voted in favor of Mr. Whiteside's appointment as counsel, one member requested that a meeting of the Council be called, three members were not heard from.

The Secretary read the following:

August 5, 1920.

TO THE PRESIDENT AND THE COUNCIL,
Medical Society of the State of New York.

GENTLEMEN:

After mature deliberation over the contents of a circular letter from Mr. James Taylor Lewis, Counsel of the Medical Society of the State of New York, dated New York, July 31st, 1920, we believe that the best interests of the membership of the Medical Society of the State of New York will be fostered by immediate adjustment of the differences between the Special Committee of the Council that includes the President, the Speaker and the Secretary, and the Counsel, whereby the services of the Counsel may be retained until the next annual meeting of the House of Delegates at the remuneration voted by the Council and subsequently rescinded.

We believe that the long and valued service of Mr. James Taylor Lewis as Counsel should not be terminated at this particular juncture. We respectfully request that a special meeting of the Council be called immediately and arrange with Mr. Lewis to continue as Counsel until after the next meeting of the House of Delegates.

ARTHUR G. BENNETT
CHARLES G. STOCKTON
GEORGE F. COTT
F. PARK LEWIS
JULIUS RICHTER
GROVER W. WENDE

Buffalo, N. Y., August 28, 1920.

DR. J. RICHARD KEVIN, President,

DEAR DR. KEVIN:

A joint meeting of the Council of the Medical Society of the County of Erie, the Delegates to the State Society from Erie County, and the officers of the 8th District Branch, was held at Buffalo, on August 27th, 1920.

This meeting was called for the special purpose of considering the resignation of Mr. James Taylor Lewis, as Counsel of our State Society, and what effect the acceptance of such resignation would have upon the 730 members of our Erie County Society, the 8th District Branch and the State at large.

After thorough discussion of the subject the following resolution was unanimously adopted:

"After mature deliberation over the contents of a circular letter from Mr. James Taylor Lewis, Counsel of the Medical Society of the State of New York, dated New York, July 31st, 1920, we believe that the best interests of the membership of the Medical Society of the State of New York will be fostered by immediate adjustment of the differences between the special committee of the Council of the State Society and the Counsel, whereby the services of the Counsel may be retained until the next annual meeting of the House of Delegates, at the remuneration voted by the Council and subsequently rescinded.

"We believe that the long and valued services of Mr. James Taylor Lewis as Counsel should not be terminated at this particular time, for reasons which are self-evident to every one familiar with this most important work of malpractice defense.

"We respectfully request that immediate arrangements be made by the Council with Mr. Lewis to continue as Counsel until after the next meeting of the House of Delegates."

I was directed to forward this resolution to the President and Secretary of the State Society.

Kindly acknowledge receipt of same, thereby greatly obliging,

Yours very truly,

FRANKLIN C. GRAM, *Secretary*,
Medical Society of the County of Erie.

WHEREAS: We are informed that the Counsel of the State Society has resigned, such resignation to take effect on September 1st, 1920 and

WHEREAS: We understand that his resignation was caused by the fact that the Society, through its Council, has failed to provide adequate compensation under the present conditions of living and

WHEREAS: At the meeting of the House of Delegates, held on March 22nd, 1920, a per capita charge of \$2.00 was levied on each member with the understanding that a portion of such assessment was for the purpose of furnishing additional compensation to the Counsel.

THEREFORE: We, the undersigned officers and members of the Medical Society of the County of Monroe; officers of the Seventh District Branch of the Medical Society of the State of New York; and members of the House of Delegates of the State Society from Monroe; respectfully request that a special meeting of the Council of the Medical Society of the State of New York be called at once in order that some means may be found whereby the services of our Counsel, Mr. James Taylor Lewis, may be retained, at least, until the next annual meeting of the Society.

Respectfully submitted,

WILLIAM M. BROWN	CHARLES O. BOSWELL
BENEDICT J. DUFFY	EDWARD L. HANES
O. E. JONES	H. L. PRINCE
G. KIRBY COLLIER	CHARLES E. DARROW
CLARENCE V. COSTELLO	

Schenectady, N. Y., July 12, 1920.

DR. E. L. HUNT, Secretary,

Medical Society of the State of New York.

MY DEAR DR. HUNT:

At a meeting of the Medical Society of the County of Schenectady held June 22nd, the following set of resolutions were passed by the Society:

"WHEREAS, it has come to the notice of members of the Medical Society of the County of Schenectady that a definite effort has been made or is being made to replace Mr. James Taylor Lewis as Counsel for the State Society, and whereas we believe that the work of Mr. Lewis to be one of the greatest assets of the State Society, and that it would take a considerable period of time to train another man to do the work done by Mr. Lewis,

"THEREFORE, be it resolved by the Medical Society of the County of Schenectady that we deprecate any efforts to replace Mr. Lewis, unless there be unquestionable adequate reason for doing the same."

Yours very truly,

WILLIS H. VANDERWART, *Secretary*,
Medical Society of the County of Schenectady.

19 Fifth Avenue,
New York, August 12, 1920.

TO DR. EDWARD LIVINGSTON HUNT,
Secretary, etc.

DEAR MR. SECRETARY:

Will you kindly present this communication to the Council of the State Society or to any Committee or Meeting called to consider the status of Mr. Lewis as Counsel of the Society or to act upon his resignation, and oblige

Yours sincerely,

J. MILTON MABBOTT.

JAMES TAYLOR LEWIS, ESQ.,
40 Exchange Place, New York City.

DEAR MR. LEWIS:

Allow me to acknowledge receipt of your letter dated July 31st, 1920, addressed to the Council and to the House of Delegates of the Medical Society of the State of New York.

I regret very much that any conditions should have arisen which seem to threaten the severance of the relations which have existed between yourself and the Society. I have looked upon your services as being exceedingly valuable in the defense of malpractice cases—and I have felt that your services should be available also to members of the Society accused, indicted, or arrested on criminal charges.

Naturally I should wish to leave it to your own judgment first as to whether, after a preliminary examination you might prefer not to be associated with the defense—and, secondly, I should feel that the Council of the Society or a Committee should pass upon your report and either excuse you from acting, or direct you to proceed to defend the accused member, even contrary to your own recommendation. In other words, I believe your action and the Society's position should be determined in every case on its merits, but giving the benefit of the doubt (if there be elements of doubt) to our accused fellow-member, be he great or small, be he accused of a great or small offense, and without undue deference to the rating of the interests arrayed against him.

Of course I have no means of knowing how serious the breach has become between yourself and the Council of the Society, but I sincerely hope the difficulty may be amicably settled and that you will continue to hold the office of Counsel, with a better understanding. Believe me,

Yours very truly,

August 1st, 1920.

J. MILTON MABBOTT.

The Secretary read the following communications which had been sent by Mr. Lewis to members of the Society, and to members of the Council and of the House of Delegates:

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

JAMES TAYLOR LEWIS, *Counsel*

40 Exchange Place, N. Y.

July 29, 1920.

MY DEAR DOCTOR:

If you did not see it in the paper, I hurry to advise you that I have been compelled to resign from the State Society as its attorney, to take effect September 1st, because the Executive Committee of the Society has refused to increase my salary, to keep up with the tremendous increase of my expenses incident to my work.

You have the privilege of retaining me, or accepting any one who may attempt to go on with the work of the Society. If you wish me to go on with your case you may send me a check for \$350 as retainer, and I then will go on toward the completion of your appeal. For my services in preparing your case for trial and other work which will have to be done up to September 1st, of course, you will not have to pay.

As your case now stands I have served a printed proposed case on appeal upon my adversary and I am waiting for his proposed amendments to it, before I get the case completely printed.

If you wish to take the attorney which the Executive Committee of the Society selects, all you have to do is to advise me of that fact and I will forward to him all the papers in the case together with a consent to the substitution of attorney.

I hasten to advise you of this situation, in order that you will be properly represented.

Please let me hear from you at your earliest convenience.

Faithfully yours,

JAMES TAYLOR LEWIS.

40 Exchange Place, New York City.

July 30th, 1920.

MY DEAR DOCTOR:

You are advised that I have resigned as Counsel for the Medical Society of the State of New York, because the Council has refused an increase of salary.

In fairness to you I am immediately notifying you, in order that you shall not go unrepresented or inadequately represented. I shall be glad to proceed with your defense.

If you wish me to continue as your attorney you may send me \$150.00 as a retainer to continue your defense; the balance can be arranged should your case be brought on for trial.

Who may be employed to attempt to go on with this work I do not know, the Secretary of the Society will no doubt advise you; upon request I will forward your papers.

Please let me hear from you at once.

Faithfully yours,

JAMES TAYLOR LEWIS.

40 Exchange Place, New York.

August 19, 1920.

MY DEAR DOCTOR:

I wrote you on July 30th, in reference to your case, but have heard nothing. If you wish me to proceed, advise me at once and send retainer check for \$150.00.

My resignation takes effect September 1st, and you ought not to neglect this matter any further.

I am very glad to go on with your case, but must ask you to send check and so advise me.

Hastily and Faithfully yours,

JAMES TAYLOR LEWIS.

NIGHT LETTER—Collect.

New York, August 18, 1920.

To _____:

Wrote you reference to your case received no answer. If you wish me to go on with your case send check for one hundred fifty retainer at once and I will be glad to defend. Seems bad time to change horses but use your own judgment.

JAMES TAYLOR LEWIS.

July 30, 1920.

MY DEAR DOCTOR:

After twenty years of continuous effort I have reluctantly resigned as Counsel of the Medical Society of the State of New York. My personal expenses have become so much increased that I could not go on unless the Council granted my request for an increase in salary, which has been refused. Who will attempt to take up this work I do not know.

I have determined to continue to legally represent members of the profession from outside of the Society, from a carefully selected list.

Upon receipt of \$25.00, I will forward a Certificate of Retainer of my services, in defense of any civil action for alleged malpractice, the cause of which accrued after the date of such retainer, in any District Court of the United States, Supreme Court of this State, or County Court of any County in this State, without additional expense to you for such services and for the period of one year. The amount of this retainer I have made small to be within the reach of every doctor.

A fighting defense you are entitled to receive, one which shall protect your reputation; this is in no sense in competition with indemnifying insurance which has proven so often to be disadvantageous.

No doctor, however long or distinguished his career, is immune from malpractice attack; you may feel that you are, but years of experience have taught that no one is immune.

I shall be glad to receive a check for my retainer by return mail and will immediately forward the Retainer Certificate.

With best wishes, believe me

Faithfully yours,

JAMES TAYLOR LEWIS.

August 23rd, 1920.

TO THE SECRETARY OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK:

I have received two communications this month from Mr. Lewis, Counsel for the Society, to the effect that his resignation takes place on September 1st, 1920.

Two years ago there was a threatened case for malpractice against me, in which no papers had been served upon me.

Mr. Lewis assured me two years ago that nothing further would be done in the case.

He now advises me that after September 1st, I will either be inadequately represented, or not represented by counsel, and asked me if I wished him to proceed with the case.

Will you kindly advise me at once.

Sincerely,

40 Exchange Place, New York City.

TO THE COUNCIL, AND TO THE HOUSE OF DELEGATES OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK:

Because the official JOURNAL of the State Society has omitted them from the July JOURNAL, I have deemed it necessary and you are respectfully advised of the fol-

lowing facts with special reference to the Counsel of the Medical Society of the State of New York.

At the regular annual meeting of the House of Delegates a resolution was introduced and seconded, looking to the censure of your Counsel in his defense of members of the State Society who had theretofore been indicted for violation of what is known as the Harrison Law, a Federal enactment referring to the purchase, sale and administration of narcotic drugs. This motion was practically unanimously defeated.

At the organization and first meeting of the newly selected Council on March 25th, the following resolutions referring to your Counsel were adopted:

(1) "Moved that the Counsel shall not be permitted to take criminal cases, without the consent of the Council or a Committee of the Council."

This Committee was, by resolution, to act as advisors of the Counsel, decide whether or not he should undertake the defense of criminal cases of members of the State Society, or other physicians, and that such Committee consist of the President, Speaker and Secretary. This resolution was passed, pursuant to the suggestion of the Counsel himself, if the Council wished it.

(2) "Moved that a new contract be made with Mr. Lewis, as Counsel of the Medical Society of the State of New York, and that the resolution appointing a Committee consisting of the President, Speaker and the Secretary of the Society, be incorporated in the contract."

(3) "Moved that in compliance with a request received from Mr. Lewis that his salary be raised to \$12,000 beginning with June 1, 1920, and ending April 1, 1921."

That the demand for a raise in salary had been granted, your Counsel was advised by the President on the same day.

At a regular meeting of the Council, which by the by-laws was required to be held in the month of May, and which was held on the 22nd day of May, the following resolution was adopted:

(4) "Moved that the entire resolutions as they appear on the minutes, relating to the making of a new contract with Mr. Lewis and the raising of his salary, be rescinded; carried."

Verbal notice of this resolution reached your Counsel on June 16th, 1920. Such resolution was without notice to or permission of your Counsel.

At this meeting on May 22nd, a "Committee of Five" was appointed, consisting of four members of the Council residing in the City of New York, and one residing in the City of Albany, to secure a legal opinion as to the legal status of your Counsel in his relation to the Society. No inquiry was made of your Counsel nor intimation to him that there was any legal question for determination. The lawyer employed by this Committee is and has been for some time the lawyer for the New York County Medical Society.

At a special meeting of the Council, called for June 16th, 1920, this lawyer appeared before the Council and his opinion was presented. Your Counsel, having been requested to appear and answer certain questions at this special meeting, did so appear and was questioned by the lawyer for the County Medical Society of New York County and by two or three members of the Council, which questions referred to his defense of one of the two members of the State Society who had been indicted under the Harrison Act. Your Counsel was then requested to retire and did so. The Council remained in session, together with the lawyer for the New York County Medical Society. Your Counsel, on request for information as to what was done, has been informed that the following resolution was then adopted:

(5) "Moved that the 'Special Committee of Five' be continued to bring in some constructive program for the reorganization of the legal department of the Medical Society of the State of New York, and report at the next meeting of the Council."

At the end of the Court season and on the 1st day of July, 1920, an informal conference with the President of the Society and the Speaker of the House of Delegates was requested by your Counsel at such convenient time and place as the President might select. On the 15th day of July a definite appointment was made by a second letter requesting the President and the Speaker of the House of Delegates to meet your Counsel at his office on the 19th day of July, 1920, at 12 o'clock noon. On July 19th, the President only called. After a few moments of introductory talk, he hurried away. Nothing was accomplished. Both were notified of the reluctant determination of your Counsel to resign.

On the 26th day of July, 1920, your Counsel transmitted to the Secretary of the Society his resignation as Counsel, to take effect September 1st, 1920, because he could not continue his work owing to the inadequacy of his compensation.

It may be important, therefore, that a special meeting of the present House of Delegates, which finally passed upon the question of criticising your Counsel, be convened for the purpose of receiving and acting on a complete report to it, of activities and resolutions of the Council, and the employment of a new Counsel; or that the Council be called together to receive and act on the report of the "Special Committee of Five," if such a report is desired, and to employ a new Counsel. The prompt employment of a new Counsel by the House of Delegates or the Council, is, in any event, absolutely necessary. Calling the House of Delegates would be a considerable expense.

Dated, New York, July 31st, 1920.

Moved that Mr. James Taylor Lewis' resignation be accepted by the Council; seconded and unanimously carried.

Moved that in the future the attorney for the Medical Society of the State of New York be required as a part of his work, to furnish an annual report of his work, which report shall be on file in the State Society office at all times; seconded and carried.

Moved that the members of the Council be furnished with a synopsis of the facts relating to the resignation of Mr. Lewis, and the facts leading up to his resignation. This synopsis to include copies of Mr. Lewis' letters to the President, and of letters sent by him to the members of the Council and of the State Society; seconded and carried.

Moved that the minutes of the several meetings of the Council be published in the JOURNAL at as early a date as possible; seconded and carried.

Moved that Mr. Whiteside be appointed Counsel of the Medical Society of the State of New York until the next meeting of the House of Delegates, providing satisfactory financial arrangements can be made with Mr. Whiteside; seconded.

Moved that the resolution be amended to read—At a salary of \$9,000 per year.

Resolution as amended, seconded and carried.

Moved that the officers of this Society be directed to prepare a certificate of appointment as Counsel and send to Mr. Whiteside; seconded and carried.

Moved that Mr. Lewis be notified in writing that his resignation has been accepted, and that the Council has confirmed the action of the President in previously accepting the same.

There being no further business, the meeting adjourned at 6:20 P. M.

EDWARD LIVINGSTON HUNT,
Secretary.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

A SHORT HISTORY OF NURSING. FROM THE EARLIEST TIMES TO THE PRESENT DAY. By LAVINIA L. DOCK, R.N., in collaboration with ISABEL MAITLAND STEWART, A. M., R.N. Published by G. P. Putnam Sons, New York and London. Price, \$3.50.

THE SHIBBOLETHS OF TUBERCULOSIS. By MARCUS PATERSON, M.D., Medical Superintendent of the Brompton Hospital Sanatorium, Frimley; Resident Medical Officer, Brompton Hospital, London. Published by E. P. Dutton & Company, New York City. Price, \$5.00.

GEORGE MILLER STERNBERG. A Biography by his wife, MARTHA L. STERNBERG. Published by the American Medical Association, Chicago, Ill.

MASSAGE AND EXERCISES COMBINED. A Permanent Physical Culture Course for Men, Women and Children. Health-Giving, Vitalizing, Prophylactic, Beautifying. With 86 illustrations and deep-breathing exercises by Albrecht Jensen. Published by the Author, New York City. Price, \$4.00.

Book Reviews

A MANUAL OF PHYSICAL DIAGNOSIS. By AUSTIN FLINT, M.D., LL.D. Eighth Edition, revised by Henry C. Thatcher, M.S., M.D. 12mo, 362 pages, illustrated. Philadelphia and New York, Lea & Febiger, 1920. Cloth, \$3.00.

The eighth edition of this book again emphasizes the wisdom and necessity of careful clinical work and observation upon the patient. Physical findings are to be noted, and deductions drawn from these findings, in addition to which the more recent laboratory results may be associated. The fact that eight editions have been published shows the need of this excellent book.

H. M. M.

HEART TROUBLES; THEIR PREVENTION AND RELIEF. By LOUIS FAUGERES BISHOP, M.D. Crown 8vo, cloth, 435 pp. 30 full-page half-tone plates, besides text illustrations. New York and London, Funk & Wagnalls Co., 1920. Price, \$3.50 net.

This book is written as the author intended it to be, more particularly for the layman. In so doing, he has simplified the language of cardiac conditions so that the non-medical man may understand and at the same time employ those measures as are necessary for his well-being.

It invites a cardiac to seek the services of one who is prepared to investigate his or her condition with all modern means. It also is of use to the young physician in that it shows him how to speak in the language of the layman when getting at the bottom of his or her trouble.

On the whole, this book should be found quite useful both to the young physician and more particularly to the layman.

S. R. SLATER.

DIAGNOSIS AND TREATMENT OF BRAIN INJURIES WITH AND WITHOUT A FRACTURE OF THE SKULL. By WILLIAM SHARPE, M.D. 232 Illustrations. Published by J. B. Lippincott Company, Philadelphia and London. 1920. Price, \$8.00.

Anyone who has had special neuro-surgical training, particularly in brain surgery, has long ago had repeatedly impressed upon him the curious lack of appreciation of the fundamental principles underlying its practical application, through questions put by visitors from various sections of the country to such special clinics. Let it be emphasized, furthermore, that while in some cases it may be the general practitioner in the smaller community, he does not by any means represent the majority of those still unfamiliar with the basis of modern treatment—palliative and operative—as worked

out by Harvey Cushing and his disciples, and embodied in the large mass of clinical experience here represented. Many of these men are general surgeons of ability and skill, and some have also done a little neuro-surgery incidentally, but when the question is put day after day as the reviewer has heard it himself, "Do you open the dura when performing a subtemporal decompression?" and "How extensive a fracture of the skull is considered an indication for operation?" it is sufficient evidence to betray an utter lack of the ground work for which all the elaborate details must frequently be pieced together.

The reviewer would consider the greatest value of this new volume on brain lesions to rest on a legitimate dissemination of the principles of brain surgery rather than on the volume of material represented by one clinic.

The work on fractures of the skull needs widespread study, not only by the surgeon, but the medical man as well, because only too often these patients are hurried off for some operative intervention for a non-depressed, linear fracture of the vault, while a serious brain injury with hemorrhage, or more often a constantly increasing cerebral edema with signs of medullary compression and no demonstrable break in the bone, will be allowed to pass out within a few hours after injury on palliative treatment because there is absolutely no comprehension of the underlying principles involved.

It is these common errors repeated many hundred times, that have created a real and just demand for a better and saner understanding, in order to most efficiently conserve the patient's welfare.

The present volume is one valuable to all medical men, inasmuch as the various conditions of the brain discussed come to the surgeon through many medical channels, and the importance of a knowledge of a few essential points in examination is beyond dispute.

Every medical man today should include the ophthalmoscope and the proper technic for spinal puncture in his equipment, since the need for these examinations arises in every field of medicine at some time or other, and does not demand specialization but often will give patients a broader chance in brain lesions recognized early than when investigated by the surgeon in late, destructive stages, where palliation is the only hope. It is clearly shown at operation that the futility is due to late diagnosis with consequent, permanent brain destruction rather than to the essential nature of the pathology causing it in repeated instances.

Brain surgery in endless cases has not the hopeless prospect generally reputed, but is forced to this level innumerable times, owing to prolonged delay in diagnosis when early intervention would have given as permanent a recovery as elsewhere in the body.

These facts must eventually become self-evident, but meanwhile, because of the more delicate manipulation demanded, and less general familiarity than with surgery of other regions, it has not been grasped by the profession at large.

The principles in this volume have been applied to an immense amount of practical material, and the book can afford substantial information of great value to every medical man.

H. G. DUNHAM.

Deaths

FREDERICK E. CLARK, M.D., New Brighton, died October 5, 1920.

FREDERICK L. CLAASEN, M.D., Albany, died August 13, 1920.

JAMES T. GIBSON, M.D., Yonkers, died September 16, 1920.

MOSES KAHN, M.D., Brooklyn, died September 11, 1920.

GAETANO F. SAMARELLI, M.D., New York City, died September 12, 1920.

EDGAR M. WOOLF, M.D., New York City, died September 26, 1920.

NEW YORK STATE JOURNAL *of* MEDICINE

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NOVEMBER, 1920

DELAYED EMPTYING OF THE STOMACH IN INFANTS AND CHILDREN.*

By CHARLES GILMORE KERLEY, M.D.,
NEW YORK CITY.

THE emptying time of the stomach in normal children in health, is found to be as follows:

Under 6 months, 3 hours
6 to 18 months, 3 to 4 hours
After the 18th month, 4 hours

Food residue is not present in the stomach of a normal child two years of age or older, 4 hours after a meal suitable for the age.

In our X-ray studies of cases of digestive ailments we have found food residue as long as 13 hours after a meal.

Factors that cause habitual retention in infants:

Hypertrophic pyloric stenosis
Pyloro-spasm
Mucous gastritis

Factors causing habitual retention in older children:

Pyloro-spasm
The dilated and ptosed stomach
Defective stomach peristalsis.

The symptoms of hypertrophic-stenosis in the infant is usually but not invariably of abrupt onset. The vomiting is persistent and projectile. Occasionally two or more meals will be retained and vomited together.

Various foods are alike expelled, breast milk faring little better than other food. Constipation is persistent, loss of weight is rapid, and there is urgent thirst.

Persistent retention of a considerable portion of the ingested food in a young infant after three hours means, in a vast majority of the cases, an organic stenosis and may be relied upon by those who are not sufficiently familiar with abdominal palpation to detect a tumor at the pylorus.

Upon abdominal examination, these infants present very similar findings. A tumor is felt at the pylorus and the stomach wave is usually present after a meal or during the feeding process.

The tumor will usually be found about midway between the umbilicus and the anterior margin of the short ribs on the right side. Occasionally it will be found well up under the liver. In such cases the tumor is very difficult to detect.

Pyloro-spasm, Hyper-motility.—Some experienced observers maintain that pyloro-spasm without hypertrophy does not exist. The history of the following case is not in accord with this view.

A vigorous full-term bottle-fed baby began to vomit on the ninth day. The onset of the vomiting was sudden. It was projectile and occurred after each feeding. There was but little retention largely because of the complete emptying through vomiting. Various modifications of milk were given and were rejected as likewise was barley water and plain water. There was rapid loss in weight, constipation, scanty urine and great thirst. The stomach wave was typical, a tumor could not be felt. A surgeon saw the case in consultation and advised that the child be sent to the hospital for observation. An hour or two later a wet-nurse arrived. The baby was given the breast for two minutes, in two hours for four minutes, in three hours for ten minutes. The following day, regular nursings at full time, fifteen minutes were begun. The infant had vomited persistently and explosively for six days and lost 20 ounces in weight. There was no vomiting whatever after the breast feeding. There was no re-appearance of the peristaltic wave. The infant gained 9 ounces the first week and made an uninterrupted gain thereafter.

A three weeks' old baby, nursed by the mother, had gained over birth weight and was doing well, in every way. The mother became greatly worried on account of her husband having been drafted into the army. The baby developed a slight temperature and began to vomit, projectile and persistent. There was the typical stomach peristaltic wave, constipation, and scanty urine. The mother was a healthy young woman and anxious to nurse her baby. Various measures were attempted to stop the vomiting; the giving of

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 25, 1920.

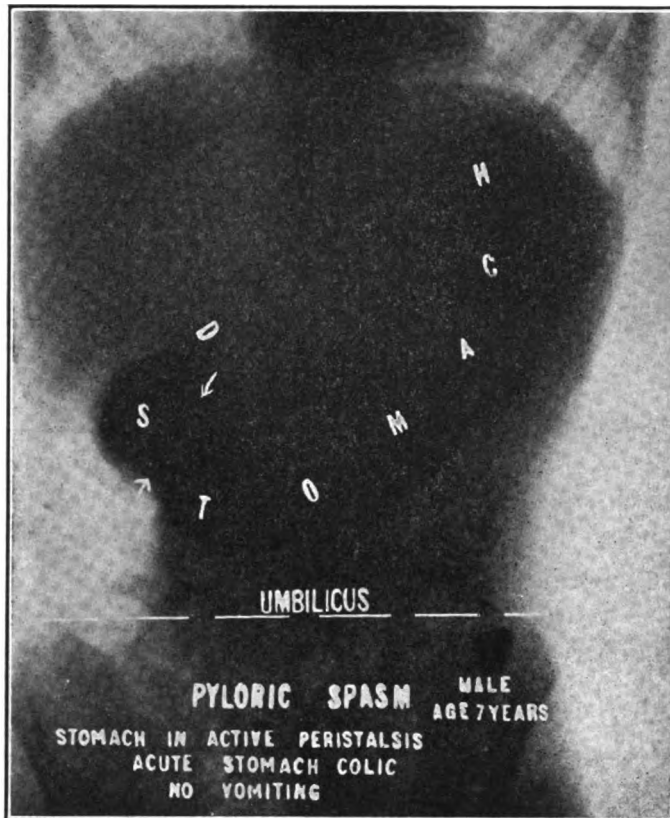


FIG. 1—X-ray taken three hours after bismuth meal, no food passing pylorus.

barley water and lime water was brought into use in diluting the milk, but the vomiting continued. The child was taken from the breast and given a plain milk and barley mixture. The vomiting ceased not immediately but gradually. The father was excused from the draft because of a physical defect and after the baby had been four days on the bottle, the nursing was resumed, the breasts in the meantime having been relieved regularly by the means of the breast pump. The vomiting was of no further consequence. The baby gained in weight and there was no further trouble.

The Element of Hyper-motility.—It is a mistake to look upon vomiting in these spasmophilic infants as due entirely to spasm at the pyloric orifice. If one will take the time to observe one of these patients after feeding, it will be apparent that it would be quiet impossible for a normal pylorus to be sufficiently patient to allow of the passage of the stomach contents at a rate demanded by that over-acting stomach. It is in this type of case particularly that atropin is useful.

Mucous Gastritis.—This condition is one not infrequently encountered. It is characterized by vomiting of small quantities or better a persistent regurgitation in mouthfuls when awake, or the regurgitation or spitting may be delayed and not

occur until an hour or so before the next feeding. Testing for retention three hours after a meal will reveal an ounce or two of residue composed of some food retained but chiefly of thick, stringy mucus. The mucus is forced to the pyloric orifice by the stomach peristalsis and cannot pass and blocks the openings. Autopsy in these cases shows thick tenacious mucus lining the stomach walls.

A case in point is the following:

A girl, 3 months of age, came to me weighing nine pounds and ten ounces. The story was one of habitual regurgitation regardless of the various changes that had been made in the food. The story was that of gas eructations, spitting of mucus and food and in greatest amount during the hour before the next feeding. There was considerable discomfort and restlessness, the stools being usually well digested.

Benzoate of soda and atropin were given in recognized doses. After nine weeks, during which time various changes had been made in the food we had accomplished but little. She then weighed ten pounds and twelve ounces and was a chronic spitter and habitually unhappy. I then brought stomach washings into use and after four washings at two-day intervals, the regurgitation ceased and in twelve days there was a gain of thirteen ounces. The stomach washing was delayed as we wished to try out other measures.

A means of distinguishing between hypertrophic pyloric-stenosis and pyloro-spasm is the presence of residue after three hours in the stenosis cases. Such findings are not present in the purely spasmodic cases.

Pyloro-spasm in Older Children.—X-ray studies show us that pyloro-spasm with food retention in children of the runabout and school age is not as unusual as has been supposed. Spasm at the pyloric outlet may occur at any age in childhood and in any acute stomach disturbance.

A boy eight years of age passed the summer at a summer hotel. He had been left largely to select his own meals. He drank plenty of ice water, had ice-cream every day and abused his stomach generally between meals. There had been several attacks of acute indigestion accompanied by a good deal of stomach pain. He came under observation because of stomach colic of a very severe nature. Morphine hypodermically had to be resorted to for relief. With attempts at feeding, the attacks of pain were repeated. After a week of ineffectual treatment, an X-ray examination was suggested and carried

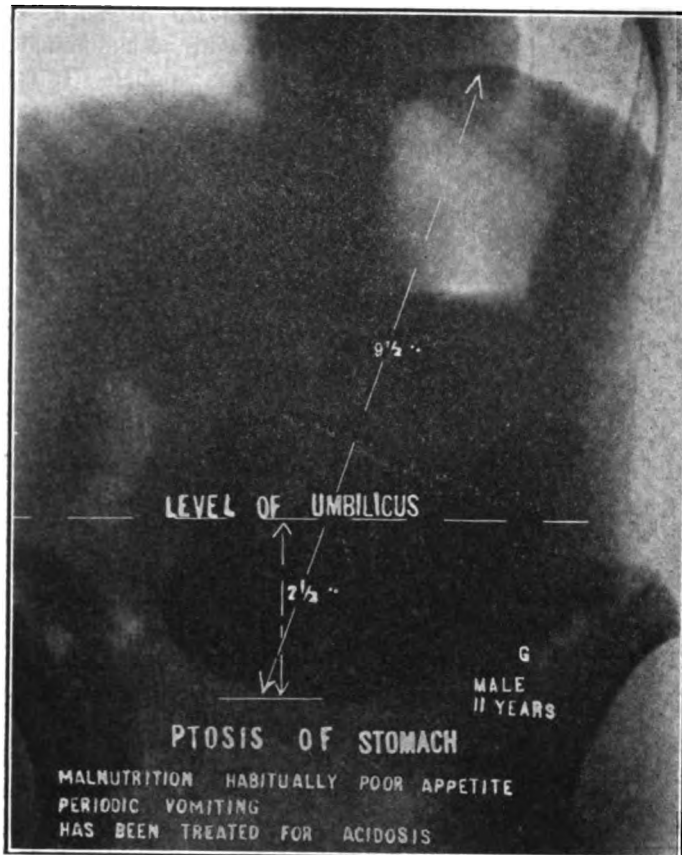


FIG. 2—Seven hours required for complete emptying.

out. Three hours after a bismuth meal it was found that none of this meal had passed the pylorus and the fluoroscopic examination showed the stomach in active peristalsis. The radiogram of this case shows hyper-motility and pyloro-spasm. (See Fig. 1.)

The Dilated and Ptosed Stomach.—(Fig. 2) represents a stomach of this type. In this patient, residue was present in the stomach seven hours after a bismuth meal. In such a patient there is no apparent spasm. There is a defective motility, a lack of stomach energy, a relaxation of the organ and consequent delayed emptying. The radiogram shows a marked ptosis. Fluoroscopic examination revealed a hypo-motility.

Fig. 3 shows a stomach of a child three years of age, normal in size and in which there was a considerable residue four hours after a meal. Eight hours approximately was required for complete emptying. It has been found that in this type of case there is often an associated stasis, an habitual delay in the intestine, usually due to sacculations, kinks or most frequently an elongated sigmoid.

Fig. 4 shows the elongated sigmoid of this patient. When the constipation in

cases of this sort is relieved the stomach empties normally. One of the pronounced effects of delayed stomach emptying is as might be expected, loss of appetite. The child belongs to that type which must be coaxed to eat. A child will not be hungry with a portion of a previous meal or meals in the stomach. The absence of appetite in this type of case is perhaps the most interesting observation we have made in a study of over seventy cases of gastro-intestinal disorders by means of the X-ray. Cases which show delayed emptying by X-ray are always verified by stomach tube examination.

Management in the Infant.—When it has been demonstrated that organic stenosis exists, the sooner the Ramstedt operation is performed the better chance for the recovery of patient.

Pyloro-spasm.—Daily stomach washing is of a good deal of service. Breast milk should be given if possible, but not always the breast milk of the mother. If artificial feeding is required a low fat and low sugar mixture should be given at intervals of four hours. The elevated position of the head and shoulders, as advised by Charles Hendee Smith, should be practised. The feeding of thick

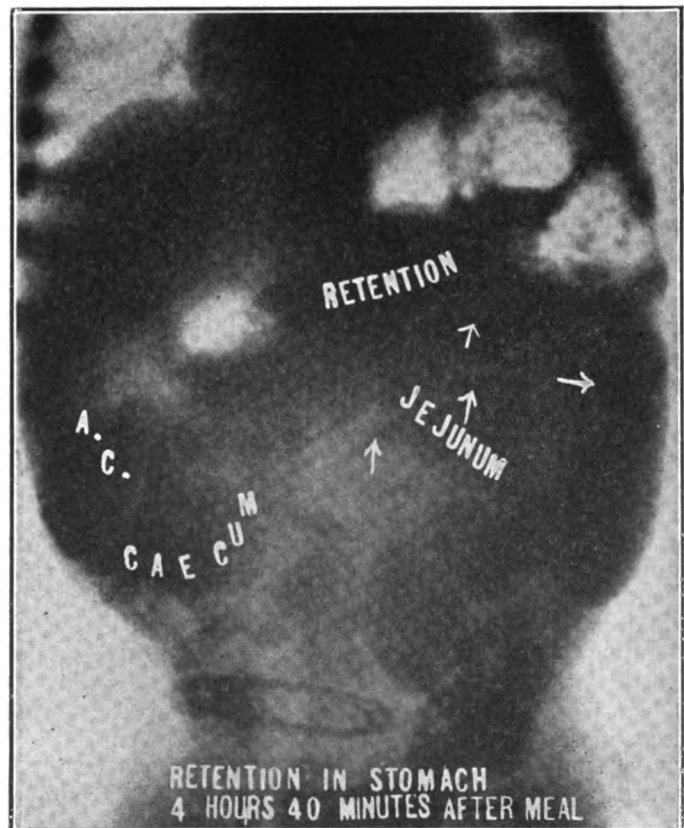


FIG. 3—Eight hours required for complete emptying.

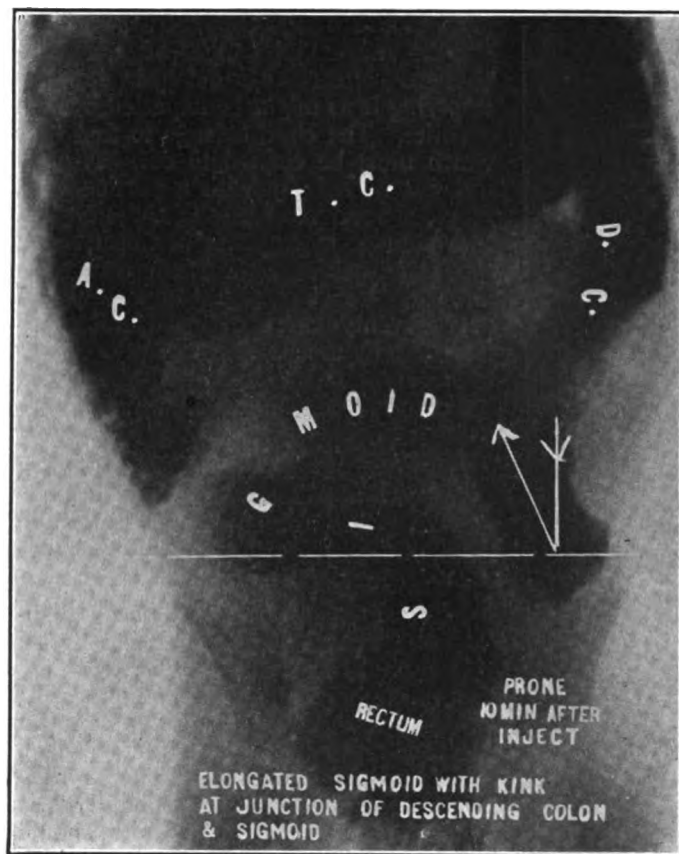


FIG. 4.

gruels are advocated for this condition by different authors. My results with thick gruel feedings have not been brilliant.

Atropin, grs. 1/1000 in each feeding (Haas) should be given. The atropin may be increased to 2/1000 or 3/1000 of a grain in each feeding in obstinate cases.

Mucous Gastritis.—In these a few daily stomach washings, the position of Smith, and a low fat and sugar content in the food is all that is required for a speedy cure. Atropin may also be used with very good effect.

Management in Older Children.—Pylorospasm appears to be the result of stomach irritation through an indiscretion in diet or to faulty habits in the food allowed. The use of orange juice, ice-cream, ice water and soda fountain products in an empty stomach have been the most important factors in my cases. Children with acute indigestion and repeated vomiting may show hyper-motility and pylorospasm.

Non-irritating foods such as the gruel decoctions or the gruel mixed with milk given luke-warm prove effective together with warm solutions of bicarbonate of soda.

The Dilated and Ptosed Stomach.—

These cases are fitted with an abdominal belt to which a shelf is applied. It is our aim to place the shelf so as to meet the dependent portion of the stomach. The child is given the meals to which little fluid is allowed at *five and a half to six-hour* intervals. After each meal he rests in a recumbent position for one hour, preferably on the right side.

Hypo-motility, Delayed Stomach Peristalsis.—These cases we have found in association with constipation. When the habitual intestinal stasis is relieved, the stomach will soon empty in the normal fashion, the long intervals between the meals and the absence of food excepting at meal time is carried out.

It is quite useless to attempt the management of persistent gastro-intestinal disorders in older children without the aid of an X-ray study. In infants, such examinations are only necessary in exceptional cases.

The X-ray examinations in these cases were made by Dr. LeWald at St. Luke's Hospital.

THE MORTALITY FACTORS OF LOBAR PNEUMONIA IN CHILDREN.*

By LE GRAND KERR, M.D.,

BROOKLYN, N. Y.

THE prognosis of lobar pneumonia in children is better than in adults. Even with a large area of lung involved, lobar pneumonia running its course without complications usually ends in complete recovery with a very short convalescence. Even when severe, with the temperature high and the prostration great, the crisis is followed by rapid restoration to health. On the other hand, the tendency toward certain complications, as empyema, otitis media, arthritis, subcutaneous abscess and other suppurative processes, is more evident in children than in adults and until convalescence is established, these complications alter the chances of recovery. Given a child whose nutrition is good, and whose surroundings, such as mental and physical rest, proper warmth, sufficient fresh air and suitable diet are under control, I have little fear of the outcome, no matter how extensive the involvement.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

If we are to successfully combat the factors which unfavorably affect the prognosis, we must have a clear idea of what they are and how they act. It is a common method to make the prognosis depend largely upon the evidences given by respiratory changes because these changes are supposed to be dependent upon pulmonary consolidation and congestion. It is not possible to accept this view, when we consider the clinical fact that alterations of breathing may precede any detectable pulmonary change or may disappear entirely and quite rapidly at the time of crisis with the pulmonary condition persisting as before. It is very common to find a very large area of consolidation accompanied by but slight respiratory disturbance. The reverse is also true. In lobar pneumonia great changes take place in pulmonary consolidation without corresponding changes in respiration.

We are compelled to revise our theories regarding air hunger in pneumonia because whatever else the so-called struggle for breath denotes, it does not denote a struggle for more oxygen. There are, however, other factors which markedly influence the respiration.

When lobar pneumonia occurs in either adult or child, the fatal result is most often attributed to cardiac failure. While many claim that pulmonary obstruction plays a considerable part in the inability of the heart to properly functionate, others give it a minor consideration and only accept it as an unimportant factor in a larger process.

While the toxic effect of the disease cannot be denied, there is always a question as to what effect it may have upon the heart muscle. Probably more is attributed to it than it deserves. Certain it is that many cases of quite marked toxemia show no evidence of carditis while others with much less toxemia do.

I think that it is generally accepted that myocardial involvement is to be feared but is present in only a small proportion of cases, is beyond our control to prevent and occurs without any definite relation to the amount of lung tissue involved or the degree of toxemia. Perhaps it is this fear that it may occur, coupled with the helplessness of preventing it, that makes it an easily accepted reason for the unfavorable prognosis.

And again there is the constant tendency to apply the experience gained from adults to the same disease as it occurs in children; a tendency which is always fruitful of mistakes. The cardiac crises as observed in adult life in lobar pneumonia do not have their counterpart in children. The same infection does not give the same result. We may take two notable illustrations. The infection of so-called rheumatism in adults is practically always arthritic while the same infection in children is commonly cardiac

with arthritic symptoms minor or entirely absent.

Infection by the tubercle bacillus in the adult is most constantly pulmonary. The same infection in children exhibits many variations. The infection is acute in children with rapid dissemination a characteristic, so that the disease does not spread by continuity but several organs are involved at once. Pulmonary lesions are secondary in nearly every instance; just the reverse of what happens in adult life. If the lung is involved the physical signs are inconstant, the symptomatology misleading and what we have learned from a study of the adult type almost useless. The common involvement of the lymphatic system and the bony structures is not easy to explain but the peculiarity is one of the features of the infection as it affects children. I am not now discussing reasons, but stating facts to emphasize the point which I wish to impress that the same infection acts quite differently in adults and in children.

There is sufficient clinical support for the statement that the mortality factor in lobar pneumonia in children is not predominately pulmonic and is not usually cardiac.

The toxic element of the disease which is so feared in adults and which is directly blamed for the cardiac failure is to be dreaded as much in children, but its action is very different.

Leaving out of consideration this toxemia which all must admit is the largest factor in the mortality, we still have two factors which contribute to it. We may at once dismiss acute exhaustion because the disease is self-limited, usually short in duration and with convalescence rapidly established. But the less acute type of exhaustion adds much to the gravity of the prognosis because if the course of the disease is protracted to the tenth day or beyond many die apparently from the exhaustion alone.

The other factor is an acute gastric dilatation. It will require the close observation of many unbiased clinicians to determine just what percentage of the mortality is attributable to this accident. From my own clinical experience it occurs in more or less degree in twenty-eight per cent of all lobar pneumonias and in one out of every four it becomes a positive danger to the child's life. Undoubtedly the acute toxemia causes a paresis of the gastric musculature or paralyzes the motor fibres of the vagi and the cervical sympathica supplying the stomach. It may be further excited by overloading the stomach with liquids when the nervous energy of the body is at a low ebb from the toxemia but is primarily due to the toxemia. The first symptoms are usually those of restlessness accompanied by an increased thirst and vomiting. Acute epigastric pain may or may not be in evidence. Usually the vomiting is severe enough to demand attention, but I have observed several

instances in which it was little more than a persistent eructation. Shock occurs early, but "Unless carefully observed the initial period of shock may be overlooked" (DeCosta¹).

The respirations are either increased or the breathing much more embarrassed. Cyanosis is usually present to a considerable degree. There is every evidence of increased exhaustion. These symptoms are unreliable and inconstant; dependence must be placed upon the physical signs.

The objective findings are characteristic.

Inspection often reveals a visible and palpable tumor in the upper abdomen, although not always in the normal stomach position because the organ may be abnormally displaced. Immediately after vomiting this may be reduced. While the whole abdomen may be enlarged and tympanitic, the upper portion is more prominently so. If the distension is great or the abdominal walls thick, the stomach may not be readily outlined.

Percussion findings will depend upon whether the contents of the stomach are gaseous or fluid. Usually after a very few hours, the pinched features and the objective evidence of circulatory shock are marked.

How common this experience has been: the pneumonia has continued its usual course for several days, when rather suddenly the symptoms just described become more or less prominent, causing much anxiety to all concerned. Or they may become immediately alarming with all methods of treatment and medication proving of no avail. And the child dies. From discussion with a large number of fellow-workers, I know that the symptoms caused by acute gastric dilatation are not laid to that condition but are supposed to be due to cardiac failure, dilatation not having been suspected. This explains in part the failure of cardiac stimulants: they are misapplied. Perhaps the recital of a recent case will better illustrate this.

While attending a clinical meeting at the Methodist Hospital in March, 1919, the intern reported to me that one of the children in the pneumonia ward was dying. This was at 8.30 and my examination revealed that the respiration had quite suddenly risen from 61 to 90 per minute, although the temperature remained stationary. The child was markedly cyanotic and uncontrollably restless. There had been one sharp attack of vomiting earlier. The whole abdomen was enlarged, but more so in its upper portion. The stomach was immediately washed out and orders left that nothing be allowed by the mouth for at least twelve hours. No medication was given, although it is my usual practice to administer a small amount of morphine by hypodermic. I wished to impress the intern with what could be accomplished by lavage alone to meet what he termed "cardiac failure." Immediately following the lavage the child be-

came quiet, fell asleep in ten minutes and one hour later when the respirations were taken, they were down to 41. When I saw the child again at 11 (2½ hours after the examination which revealed the acute dilatation) the child was still asleep, quiet and without the slightest evidence of cyanosis.

No doubt the lavage by its prompt removal of material which could not be acted upon because of the loss of motility of the stomach helps to reduce the shock. I am convinced that if the lavage had not been done or its performance had been delayed for a few hours this child would have died and the death would have been attributed to cardiac failure.

Treatment must be prompt and adapted to the immediate condition of the stomach. If percussion reveals much fluid the foot of the bed should be elevated from 12 to 18 inches and the left antero-lateral abdominal position assumed. The head may overhang the edge of the bed and the left arm allowed to hang or rest upon a chair while the back is supported by pillows from neck to heels.

The next essential is efficient lavage.

Efficient lavage means first the complete emptying of the stomach and this may give the needed relief. If not we must be prepared to follow it up with continuous lavage. This is accomplished by inserting a small tube through the mouth or nares and securing it by adhesive to the cheek. This avoids the repeated introduction of the larger tube.

The next essential is the absolute withholding of everything by mouth for at least twelve hours and often longer. Water, medicine, everything must be absolutely stopped. To limit or prevent a starvation acidosis, it is permissible to administer by proctoclysis a solution of bicarbonate of soda with glucose. I have not had occasion to use the metal pressure instrument devised by Abrams². For acute dilatation, firm pressure is made for several seconds with the instrument placed across the spine in the interspaces between the third and fifth thoracic vertebra. This causes an explosive eructation of gases.

Another procedure which may be desirable, but not absolutely essential, is the administration by hypodermic of small doses of morphine. I have not used eserine or atropine, although they may be of service.

In lobar pneumonia in children we have a definite mortality factor whose importance cannot be appreciated unless the possibility of its occurrence is recognized. I feel now that it is just as important to provide the simple apparatus for lavage as to carry the stethoscope. My examinations are now more directed to the abdomen than the chest; inspection and palpitation of the former are much more frequently done than percussion and auscultation of the latter. As

¹ Handbook of Medical Treatment, Vol. II.

² Abrams: Spondylotherapy.

this serious accident is more apt to occur just before or at the time of the expected crisis, the occurrence of cyanosis, restlessness and exhaustion should result in an immediate and complete examination of the abdomen. If this is done I have no doubt that the rarity of cardiac crises will be appreciated; that the symptoms commonly attributed to the heart will find their explanation in acute gastric dilatation; that the failure of all stimulants at the time will be explained and with the prompt application of the adequate measures to efficiently meet the emergency, some of the children will be spared.

INTRA - NASAL DRAINAGE OF THE FRONTAL SINUS THROUGH THE NATURAL OPENING.*

By MAX UNGER, M.D.,
NEW YORK CITY.

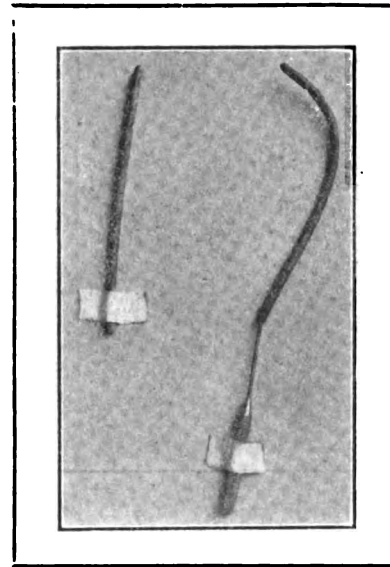
THE object sought by all physicians in the treatment of frontal (as well as other) sinus inflammations is the establishment of adequate drainage and ventilation. The attainment of this is attempted, in mild cases, by the application of constricting medicines (cocaine and epinephrin) to the fronto-nasal opening. In more severe cases, the middle turbinates and obstructing polyps may be excised. In still more intractable cases, the ethmoid cells may be opened and, in the most stubborn cases, external and internal operations on the sinuses are performed.

The three factors that prevent proper drainage in frontal sinusitis—firstly, the swelling of the nasal mucosa; secondly, middle turbinates and third, hypertrophied polyps. I believe the first to be the most important. The nasal mucous membrane, containing much erectile tissue, is subject to physiological engorgement many times during the day. When there is the added stimulus of an infection, the engorgement becomes practically constant.

When it is considered that the fronto-nasal opening is so small that it often fails to admit the smallest probe it can readily be seen how completely it can be blocked by the swollen mucous membrane.

Adrenalin and cocaine shrink the mucous membrane by direct action on the walls of the arterioles. On normal mucous membrane their action is prompt and efficient. In inflammatory conditions, however, there is exudation of cells and serum about the vessels which prevents the approach of the adrenalin and makes its action slow and incomplete or prevents it altogether. When it is considered, furthermore, that the fronto-nasal canal is about $\frac{1}{2}$ in. to $\frac{3}{4}$ in. in length, it becomes apparent how futile, in some cases, is the use of adrenalin for establishing drainage.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.



Instruments for draining frontal sinus through natural front or nasal opening.

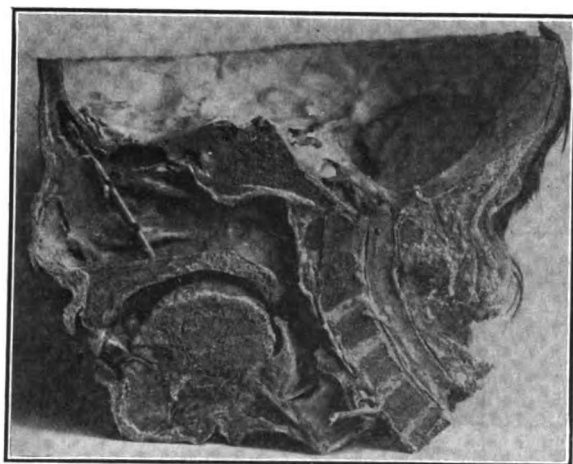
Obstructing turbinates and polyps, must, of course, be removed.

The method to be described is meant for use in cases where the natural fronto-nasal opening is intact and where no operations more extensive than the removal of polyps or of the anterior tip of the middle turbinate have been done. Briefly, it consists in the introduction into the frontal sinus, through the natural opening, of rubber or fabric drainage tubes and their continuous retention in the nose during the course of the sinusitis.

The instruments used are (1), a slender frontal sinus probe, and (2), rubber, silk or linen catheters of sizes 4-10 Fr. The largest size catheter that the fronto-nasal opening of a particular case will admit is used in that case. The ordinary urethral catheters can be used for this purpose cut down to $3\frac{1}{2}$ inches from the tip and with perforations punched in the sides at intervals of $\frac{1}{2}$ inch.



Specimen showing probe and catheter in frontal sinus; first position.



Specimen showing drainage tube in position. Final position.

The technique employed is as follows:—

The nasal mucosa is anaesthetized and the frontal sinus is probed. The probe is first used by itself to determine the size and direction of the fronto-nasal opening. If the opening is obstructed by the middle turbinate this must be removed. The size and direction of the opening having been ascertained, the probe is then pushed through the lumen of the proper sized catheter to its end. The probe, encased in the catheter, is then reinserted in the frontal sinus. The catheter is then held loosely by the fingers of one hand and the probe is gently withdrawn by the other, leaving the catheter *in situ*. The catheter is then grasped near its entrance into the opening with a nasal forceps and pushed further into the frontal sinus as far as it will easily go. Being flexible it will pass over projections that will block a metal catheter. The lower end of the catheter is then cut off intra-nasally, so that the remaining portion rests on the floor of the nose. At the end of this procedure there is then left a tube about $2\frac{1}{2}$ inches in length, extending from the floor of the nose up into the frontal sinus. This tube is left in place for one to two days, when it is removed and replaced by another. Before the tube is replaced, the sinus can be irrigated.

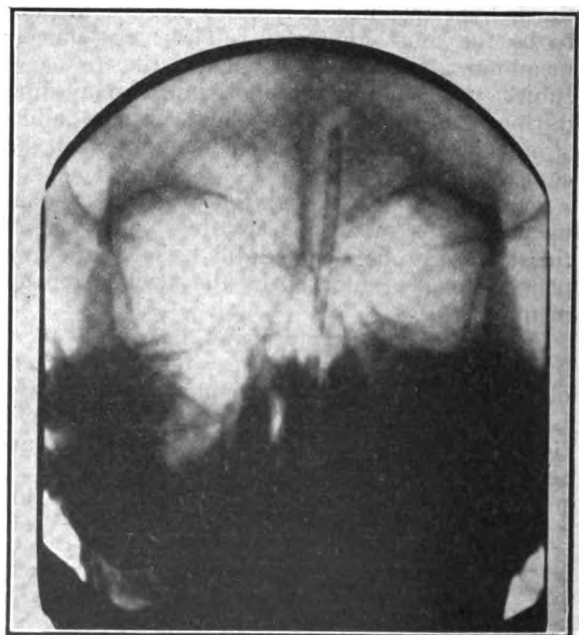
The catheter is cut $3\frac{1}{2}$ inches long to begin with because its lower end will then project from the nose after its tip is in the sinus and furnish a place for holding it when the carrying probe is withdrawn. If linen or silk catheters are used, they should be dipped into hot water before being inserted into the nose, in order to make them softer.

This method of treating frontal sinus disease has the advantages that (1), there is a minimum destruction of nasal mucosa, (2), it resists the encroachment of the swollen mucous membrane on the lumen of the fronto-nasal opening and (3), prevents blocking of the opening by small polyps.

It is in accord with the principles of surgery in that it maintains continuous drainage of the frontal sinus.

The case of frontal sinusitis which led to the development of this method and which illustrated the adequacy of the drainage obtained was the following:

G. R., aged 38, came to me complaining of frequent "head colds," much purulent discharge from the nose and difficult nasal respiration. Examination showed that in the right naris there was polypoid degeneration of the middle turbinate, with polyps filling the upper half of the naris. In the left naris there was hypertrophy of both turbinates, but no polyps. I removed the polyps from the right side of the nose. Two days afterwards the patient developed extreme pain over the right eyebrow, with chills and fever and a profuse purulent discharge into the middle meatus. From June 23d to July 21st, the treatment consisted of free use of epinephrin with nasal douches, suction and sinus irrigations. Relief was only intermittent and on July 21st, I had about decided to open the frontal sinus intra-nasally, when I hit on the plan of introducing a rubber tube into the sinus through the natural opening and leaving it in place for continuous drainage. This was done and pus could be seen pouring from the openings in the tube. The relief from pain was almost instantaneous and complete. The tube was replaced every second day for two weeks until a thin serous discharge had replaced the pus, when it was removed. The frontal tenderness was completely gone and the discharge from the nose was less



Case with rubber tube in frontal sinus through natural opening.

than it had ever been in the memory of the patient.

Case 2. Mrs. E. B., aged 39, had had a frontal sinusitis seven years ago. Present illness dated back ten days. Complained of very severe pain over left eyebrow, with chills, fever and purulent discharge from left nostril. First seen Jan. 1, 1920, treated with adrenalin. Two days later anterior tip of middle turbinate was removed. Treated for four days with adrenalin sprays, but pain increased. On Jan. 11, 1920, small polyps were seen protruding from the nasofrontal opening. Tube was inserted into frontal sinus, with marked lessening of pain and much increase of the discharge. Was treated with the tube for one week, when pain was completely gone and discharge had changed from pus to thin serum. Polyps were touched with 12½% Ag. No. 3 and disappeared from view. In three weeks her symptoms disappeared and she stopped treatment.

Case 3. Miss D. M., aged 23, suffered for twelve years with very profuse purulent discharge from the nose, more marked on right, and severe frontal and vertex headaches. Six months before right middle turbinate had been removed without relief. Examination showed great thickening of the tissues in the vault of the nose and profuse discharge. A rubber tube was put into the right frontal sinus and a silk one in the left. The tubes stay in place about two days, then fall out. They give great relief for the headaches, but attendance for treatment is irregular and no progress has been made in relieving the discharge.

NOTES ON SYSTEMIC INFECTIONS IN RELATION TO ACUTE MIDDLE EAR DISEASES.*

SAMUEL J. KOPETZKY, M.D., F.A.C.S.,
NEW YORK CITY.

THE following brief report of observations comprises notes on thirty-five systemic infections which occurred in relation to acute middle ear diseases. No exhaustive study of sinus thrombosis is intended, but rather an effort made to correlate the observations at the bedside, from the laboratory, and from the operating table, so as to bring certain factors of the pathology into discussion, and thus present a contribution to our knowledge of this subject.

In otology, probably more than in any other department of medicine, separation of the pathology into a consideration of distinct, limited areas,—grouping lesions found into sections, either under a classification on anatomical grounds or on a clinical picture evoked by the diseased functioning of a given part,—has been the earlier steps toward a comprehension of the lesion as a whole.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

One finds the earlier text-books concerning themselves with distinct pathologic entities which later are comprehended as parts of a whole process. For example, myringitis is not now considered anything other than the markedly inflamed external wall of the tympanic cavity, nor do we now consider that it often happens that only one wall of the tympanic cavity remains the seat of the lesion.

For years the conception prevailed, nor is it entirely discarded in some quarters, that an acute infection of the tympanic cavity,—an acute otitis media purulenta,—is a pathologic entity, separate and distinct from an infection of the mastoid cells,—acute mastoiditis. Because of this conception the view was common that mastoiditis followed upon or succeeded in point of time, the evolution of the otitis media, and proper treatment of the tympanic cavity prevented the evolution of the mastoidal infection.

Our present conception of this condition is not so simple. We know that the mastoid cells and the tympanic cavity are simultaneously involved in the development of the lesion—autopsy reports and radiographic studies have amply demonstrated this. Today we hold that the entire middle ear and mastoid cavity are involved at one and the same time, and that the early incision of the membrane tympani, by preventing a stasis and back pressure of the purulent contents of the mastoid cells, permits resolution to ensue within the mastoid process, and thus obviates surgical interference on the majority of mastoid infections. Such resolution is the more apt to occur when the inter-cellular bony walls of the mastoid process are not destroyed.

Likewise, we are wont to regard the invasion of the blood stream and the pathologic changes in the venous blood vessels of the mastoidal regions which accompany otogenic invasions as constituting a pathologic entity, and for purposes of study and classification they may still be so considered. The view is commonly held that the lesion of the venous blood channels presents a separate and distinct pathological process, subsequent in time to the mastoidal invasion, and most often is a consequence of failure early to interfere surgically on the mastoid process. In other words, sinus thrombosis, thrombophlebitis, and osteothrombophlebitis are pathologic entities, and, as such, are surgically preventable.

Larger experience, closer scrutiny of the mastoidal lesion, better and more intelligent clinical observation of such cases, tend to modify this conception, and for your consideration I present the study of thirty-five cases whose clinical histories were available to me for this paper, and upon which I personally have operated. Some of these histories have been reported in full elsewhere, and others are as yet unpublished.

In studying the series here presented, one finds that the type of mastoid disease which preceded

the blood vessel involvement presents the following:

Haemorrhagic Types.....	10
Coalescent Types.....	13
Chronic Mastoiditis.....	6
Abnormal Absence of Mastoid Cells	2
Mastoid Lesion Not Recorded.....	3
Fracture of Skull Through Mastoid	1

If one deducts, in this table, the abnormalities, the chronic mastoiditis, and those in which case histories failed to make record of the lesion found in the mastoid, there remain twenty-three lesions studied. Of these, ten were of the haemorrhagic type and thirteen of the coalescent type. It is to these two types of mastoiditis that attention is particularly called.

Sinus involvement eventually developing after the onset and existence of mastoiditis for a period of time,—the conception of a sequence of events finds its most logical presentation in those cases where a coalescent type of mastoid is found at operation. Here it is conceivable that the progressive advance of the disease in the direction of the sinus can be entertained, as one views the destruction of the bony intercellular structures which this type of mastoid lesion entails. Below, we will present some notes on the appearance of the sinus wall, and it is to be remarked that, with the coalescent type of lesion, in the majority of instances where sinus thrombosis subsequently developed, the appearance of the sinus wall, externally, gave evidence presumptive of the lesion within the vessel.

On the other hand, in the haemorrhagic types of mastoid, it was rarely possible to differentiate the appearance of the sinus wall from that of the normal. The conception of a sequence of events and a later involvement of the sinus finds less credence in the haemorrhagic type of mastoid lesion.

If we excluded the case wherein fracture of the skull was the etiologic factor, and another case wherein the sigmoid sinus was accidentally opened at the mastoid operation (not that this in itself caused the sinus thrombosis, but it may have been an added factor), there remain thirteen cases which presented the haemorrhagic type. Of these, three presented markedly septic symptoms from their very onset, even before the middle ear was opened, and they were under observation from the very commencement of the disease. I have already called attention to the normal appearing sinus wall in these cases. The more one studied these cases at the bedside, and the closer one watched the findings at the operating table in the light of their subsequent development, the more the impression prevailed that the condition was simply the local manifestation of a general systemic disease, and that the blood vessel involvement was simultaneous to the disease in the mastoid process, and the sepsis was exhibited because of thromboses form-

ing in the little blood vessels in the intercellular bony walls.

In the thirty-five cases studied, the appearance of the sinus wall was as follows:

Sinus Wall Normal in Appearance..	20
Sinus Wall Abnormal in Appearance	14
Not Recorded.....	1

The demonstration of a clot in the cases studied was as follows:

Clot Demonstrated.....	28
No Clot Found.....	5
Sinus Not Opened.....	2

Failure to discover the clot in the vein is in no way held to discredit the diagnosis of the septic involvement of the blood vessel, especially where septic symptoms are presented and a positive blood culture is obtained, and the septic symptoms subside after opening the sinus and ligating and resecting the jugular vein.

In the twenty-eight cases in which a clot was demonstrated, all were of the septic type except one, and in this case a well-developed clot was demonstrated at operation. The blood was not examined because the patient never gave any septic symptoms. The clot was found as an incident to an exploratory operation because of the symptom complex, which simulated cerebral abscess. Upon removal of the clot and restoration of the jugular vein, an uneventful recovery resulted.

The results of the estimation of blood culture are shown in the following table:

Blood Culture Positive.....	15
Blood Culture Negative.....	9
Blood Culture Not Taken.....	7
Blood Not Recorded.....	4

In reference to the finding of a negative blood culture, it must again be emphasized that one should not allow a negative culture to prevent surgical intervention if the clinical picture indicates that surgery is necessary, because there are so many factors which might cause a negative blood culture which must be taken into consideration. A positive culture is always of value.

In all of the cases except one, the streptococcus was the invading organism found in the blood stream. In the majority, it was the streptococcus haemolyticus. Streptococcus viridans was found once, but on subsequent culture from the same case, the streptococcus haemolyticus was found. In one case, positive culture was obtained even before the mastoid was operated upon.

As is well known, sinus thrombosis very often is accompanied by secondary lesions, and the selective action of the bacteria causes the location of such lesions either in the heart, the lungs, the meninges, or in the joints and muscles. It is to be noted that one rarely has visceral complications or secondary infections in the heart and lungs, or meninges, at the same time as one has

infections in the joints and muscles, and the reverse is also to be remarked; that when one gets secondary involvement in the joints and muscles, the viscera usually remain free. Of course, neglected cases, or patients overwhelmed with sepsis that one sees practically in the agonal stage, may present a general infection all over, but in the main, cases observed early, or during their entire course, present the above as noted at the bedside.

Of the cases comprising this study, twenty-one were cases complicated with secondary lesions, eleven had only a sinus or bulb thrombosis, and the remainder were not definitely determinable.

Results: We had fifteen deaths in the cases studied. Of these, one died having only a thrombus in the sinus. Thirteen had secondary complications, and one died of sepsis without the formation of a thrombus, as far as we were able to learn from the search for it.

We had twenty recoveries. Thirteen of these were lesions presenting a thrombus only, in addition to the mastoid infection, and seven presented thrombosis complicated by a secondary lesion.

Conclusions: From this brief study, we conclude that sinus thrombosis occurs in two distinct clinical and pathological conditions:

- A. With a coalescent type of mastoid, as secondary to, and subsequent in time to, the development of mastoiditis.
- B. With a haemorrhagic type of mastoid, as the local manifestation of a systemic infection which, in its local manifestation, involves a haemorrhagic infection in the mastoid, and in the venous blood channels.

In the last named type, sinus thrombosis is not preventable even by early surgical procedure on the mastoid, because before indications for operation upon the mastoid have developed sufficiently to justify surgery, the thrombus in the blood vessels is already extant.

THE DEVELOPMENT OF COSMETIC RHINOPLASTY.*

By SEYMOUR OPPENHEIMER, M.D., F.A.C.S.,
NEW YORK CITY.

THESE are times of reconstruction, not only of governments and economic conditions, but of faces. Much work has been done with the aim of making the war-scarred soldier not only presentable, but even handsome.

He is provided with a new nose or a new upper lip as required, and special pains are taken to make his new nose shapely and to take the graft for his upper lip from the top of his head, so

that he may not be deprived of the ornament of a mustache!

On account of the disrepute which surgery for cosmetic purposes was held before the war, its methods were shrouded in mystery and its procedures were fraught with supposedly tremendous difficulties. Fortunately, the publicity connected with the recent reconstruction work has changed all this. The mystery has vanished and the tremendous difficulties so much talked about proved practically non-existent.

Apropos of the latter, let us take an example from civil life and suppose that a patient with a large nose of the Hebraic type desires to have a hump removed from the offending feature. This is not a difficult thing to do,—not nearly so difficult as building a war-shattered nose. Any man who can perform a submucous resection of the nasal septum can go a little farther and remove a hump. Moreover, we make bold to affirm that when the hump is off no harm is done. On the contrary, the patient is happy, the rhinolaryngologist is happy and presumably society at large is happy that an ugly nose has been replaced by a slightly one. It is our hope then that the influence of the facial reconstruction work of war which has banished the mystery and odium of cosmetic surgery and its methods, will be sufficiently far-reaching to give the civil population in peace times the same benefits enjoyed by the soldier in times of war.

In a general way rhinoplasty is definable as that branch of surgery which refers to the reformation or readaptation of nasal organs or nasal structures destroyed by accident or disease; it may furthermore be referred to the correction of the nose congenitally malformed or lacking in toto. Cosmetic rhinoplasty, however, has for its object more specifically the improvement of nasal form when the malformation is either congenital or resultant from accident, remote or recent. In other words, cosmetic or corrective rhinoplasty deals with the reformation or readaptation for cosmetic reasons of nasal structures still present, all or in part.

It is true that the history of plastic surgery of the nose dates back several hundred years, but until a few years ago rhinoplasty in general, and cosmetic rhinoplasty in particular, was widely regarded as rather a questionable field of professional endeavor, so much so, that instead of its having a legitimate status before the profession, the work was almost entirely relegated to the hands of charlatans and advertising "beauty doctors," who needless to say were shrewd enough to perceive the possibilities of this work from a financial standpoint, and who did a thriving business in a field so largely eschewed by the regular practitioner of surgery.

As we look backward, it appears almost incredible that with the tremendous advance in surgical knowledge and technique since the days

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 23, 1920.

of Lister, so comparatively little was known by the surgical profession, as to the practicability and the comparative simplicity, and we may add, as to the inherent possibilities of the art of cosmetic surgery of the nose, practiced successfully as it was in some degree even by the ancients.

From Celsus, a Latin physician of the time of Augustus, have come down the first authoritative principles of the science. Susrata, from the Orient, however, discloses knowledge of the use of rhinoplastic methods in his *Ayr-Veda*, the exact period of which is not known. If we may judge by the scant reference thereto, the art of rhinoplasty seems to have been quiescent, if not practically unknown for centuries after the time of Celsus and even on through the Middle Ages. From Celsus on, medical and surgical writers appear silent upon the subject of rhinoplasty in general, until in 1495, one Alexander Benedictus, a Veronese professor at Padua, takes occasion to mention the subject. A revival of interest appears in the middle of the fifteenth century, however, when one Branca of Catania, a Sicilian surgeon, established somewhat of a reputation for the construction of noses from the facial integument. This was about 1442, and Antonius, the son of Branca, extended and improved upon his father's *modus operandi* in these cases, particularly in that he is claimed to have successfully made use of skin from the arm to accomplish the restoration of nasal organs, which method was hailed as far superior, in that it obviated in considerable degree the older method of employment of skin from the face for rhinoplasty. Antonius Branca seems to have been one of the first, if not the first authority to make use of the so-called Italian method of rhinoplasty, and it is also known that he ventured with some success in operative work about the lips and ears.

Pavoni and Mongitore repeated Branca's methods of operative procedure, and together with the Bohanis brothers at Naples enjoyed a considerable fame in rhinoplastic surgery. For the time being, however, the efforts of these pioneers seem to have made little continuous headway and ultimately fell into more or less oblivion. The work of Von Pfohlspundt, evidences that the Teutons were attracted at an early date to attempts at rhinoplastic surgery, and he appears to have written upon the subject about the time of Antonius Branca, of whose work, however, he does not appear to have had knowledge.

The real renaissance of the art of rhinoplasty appears, however, to date from the period 1546 to 1599, when one Gaspar Tagliacozzi held forth as professor in the University of Bologna, and developed considerable ability and experience in the art of rhinoplasty, so much so that in 1597 his pupils at the university published a work upon the subject in Venice, which book aside

from being somewhat of a memorial to Tagliacozzi, has been handed down as the first authoritative treatise upon restorative surgery of the nose. Tagliacozzi's operation for restoration of the entire nose from a double pedicle flap taken from the arm, achieved considerable fame, but appears to have aroused the enmity of the clergy who bitterly opposed his work, as inspired and guided by the evil one. Even after the death of Tagliacozzi, this bitter antagonism was exhibited towards him and his memory by those of the church, but in spite of these attacks the operation has been handed down to the present as Tagliacozzi's method of rhinoplasty. In general, however, Tagliacozzi's work did not arouse widespread interest, and it is recorded that even the great Ambrose Pare had little knowledge of rhinoplastic methods, save what he gathered by way of hearsay, and in common with Fallopio, Vesalius and Fabry deemed it a matter of duty to extend his apologies for this novel operation of rhinoplasty.

After still another century of forgetfulness, the western world of Europe became acquainted with the so-called Hindoo or Indian operation of rhinoplasty in 1794 through the report of Pennant on the case of one Cowasjee, an East Indian peasant whose nose had been amputated as a punitive measure, and later restored by the Koomas, a colony of potters, or as others assert, a religious sect, who were cognizant of a method for restoration of the nose through the agency of a flap taken from the forehead.

Shortly thereafter other reports on this so-called Indian operation were published and in 1811 Lynn was successful in the accomplishment of this method of rhinoplasty on a case in England. In 1814 Carpue reported two cases of rhinoplastic restoration by means of the Indian or Hindoo method of rhinoplasty, and it appears India was a fertile field for this work, as amputation of the nasal organ was often practiced as a method of punishment for certain crimes.

From this period on, Delpech, Lisfranc, Graefe, Bunker and Larrey in France and Germany; and Mutter, Warren and Pancoast in America successively added to the knowledge by new, or by various modifications of the older rhinoplastic technics. In more recent years valuable contributions have been made to our knowledge of plastic rhinological work by Rosenstein, C. Graefe, Balfour, Roux, Koenig, Nelaton, Israel, Max Joseph, Langenbeck, Roe, Raverdin, Krause, Thiersch, Gersuny, Carl Beck, Carter, T. Eck, Cohen and others.

The work of Max Joseph in Germany, and of Roe in America, was particularly of value by way of enlightenment as to the utility of cosmetic rhinoplasty, but nevertheless it is a fact that plastic and cosmetic surgery in general signally failed to keep apace of the tremendous advance in surgery proper, and further had on the whole

fallen into more or less general disrepute, particularly as regards cosmetic surgical endeavors. It was Rochefoucauld who declared that "ordinary men commonly condemn what is beyond them," and because they knew nothing of the work, and because its methods were shrouded in mystery and popularly presumed to be encircled by insurmountable difficulties, many otherwise well qualified rhinological surgeons knew comparatively little or nothing of cosmetic rhinoplasty, and because they knew not, would have nothing to do with it. The great World War, however, with its pressing demands for study and practice of reconstructive surgery for the relief of the maimed and disfigured sufferers of these Titanic struggles, has not only brought cosmetic rhinoplasty into its own, ethically speaking, but has likewise created a great demand for surgical workers trained to take care of the large numbers of head and face injuries incident to trench warfare, injuries where surgical work of a cosmetic and restorative nature is particularly indicated, and work which is peculiarly within the province of the rhinological surgeon. Along with the popular interest in, and the great necessity for this restorative work in cases of war trauma, the time seems auspicious now when once and for all cosmetic surgery, and cosmetic rhinoplasty in particular, shall be elevated to its proper dignity, with the profession, popularized and made available for the comparatively large numbers in civil life who could be benefited in mind no less than in feature by this beneficent work; and what seems equally important—rescued at this time from the clutches of the charlatan and the advertising "beauty doctor," whose conspicuous signs and blatant advertising have long preyed upon and ensnared the credulous amongst the laity.

THE APPLICATION OF THE METHODS DEVELOPED DURING THE WAR TO THE TREATMENT OF FRACTURES IN CIVIL LIFE.*

By JOSEPH A. BLAKE, M.D.,
NEW YORK CITY.

THE war has undoubtedly brought about a complete change in our ideas as to the treatment of fractures. The change came slowly and by a process of evolution. At first we were actually unaware as to what and where our changes in the customary treatment were leading us. Later, when a true conception of what we were arriving at dawned upon us and we deliberately discarded the older principles, we were able to make greater and more satisfactory progress.

Although, perhaps, not actually so stated in

our text books, the underlying principles of the treatment of fractures immutably handed down and taught us have been reduction and the immobilization of the fragments by fixing them by some retentive apparatus which necessarily should fix the adjacent articulations.

Scudder, referring to ambulatory treatment of fractures, says:

"Theoretically and practically the ambulatory treatment of fractures does not perfectly immobilize; therefore, it cannot preeminently succeed as a means of treatment."*

This statement, I believe, accurately reflects the attitude of surgeons in general before the war.

Our experience during and since the war has convinced us that immobilization is not only unnecessary but actually prejudicial in the treatment both of gunshot and of many simple fractures.

In the first place, I believe it will be instructive and interesting to review briefly the evolution of our present concept of what immobilization should be in the treatment of at least most fractures.

The presence of the large infected wounds accompanying gunshot fractures imperatively demanded changes in the splinting generally employed before the war. Windows cut in plaster casts and bridging with metal bands were used to meet these conditions, but were unsatisfactory. Furthermore, on account of the rapid changes in the size of limbs, produced either by infection and swelling or by atrophy, some form of splinting which could be readily changed or adapted was necessary. These needs led to the use of splints made of iron wire or rods, of which the Thomas thigh and leg splint is the best type since it also provides traction, the value of which is generally conceded in the treatment of all fractures. However, at first the attempt was made to apply these splints in a way in which they would provide the maximum of fixation for the fragments. The first real inkling we received that immobilization of the fragments was unnecessary was in 1914 in two cases of fracture of the humerus which were suspended in order to combat an enormous swelling of the forearm and hand. Although traction was imperfectly applied to these cases they united in good position in what then seemed to us an incredibly short time. This led to the general use of the suspension and traction treatment for fractures of the humerus, without the use of any splint for fixation and I believe that the results of this treatment are unparalleled by those of any other.

In regard to the amount of immobilization obtainable with the Thomas splint, if we analyze

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

* The Treatment of Fractures. C. L. Scudder. W. B. Saunders, 1900.

it we find that none is afforded for the proximal fragment in fractures of the upper one-third of the femur unless we affix supplementary apparatus to the outer bar of the splint, such as Pearson's screw pad to press against the fragment. In other fractures of the femur a certain amount of fixation is afforded by the lateral bars and the supporting slings. On the other hand, on account of the general use of skin traction by glued or adhesive bands applied to the leg, the knee has been, as a rule, immobilized very much to its detriment.

Toward the end of the war with the more general application of skeletal traction directly to the distal fragment and by means of Pearson's hinged supplementary leg piece (Fig. 1), motions of the knee were commenced early and kept up continuously. Although the fragments of the femur had slight, if any, fixation, the results obtainable were perfect. Moreover, the function of the muscles and joints were never lost and the nutrition of the limb was perfectly maintained. As would be expected, union takes place more rapidly and as the long period of re-establishment of function is eliminated a very appreciable saving in time results.

If we analyze as to how the correct relative position of the fragments is maintained without their being actually immobilized, we arrive at what apparently is the correct solution of the problem. The proximal fragment, if uninfluenced by exterior forces, always occupies a position in which the muscles attached to it are at rest, and it can be moved from this position through an appreciable arc before the muscles which antagonize the particular motion, resist. Consequently, it requires only a very slight extrinsic force to modify this position which we may designate as that of physiological rest. Conversely, since the motion takes place at a joint, the other member entering into the formation of the joint, whether body or limb, may move to a certain extent without changing the actual position of the fragment. If now the distal fragment is brought into line with the proximal when it occupies the position of physiological rest and sufficient traction is made in the same line to overcome overriding, the restraining effect of the stretched soft tissues is sufficient to provide the slight extrinsic force necessary to preserve the relative position of the fragments even if considerable motions take place in the adjacent articulations. Later the commencing union, although pliable, is sufficient.

In gunshot fractures there is usually destruction of muscle as well as bone and therefore in many instances less force, particularly in the way of traction, is required to obtain and maintain reduction. The question arose as to whether the methods of suspension and traction would be as successful in the treatment of simple fractures encountered in civil surgery. This has been

answered in the positive by the application of the treatment to a large number of simple fractures, no difficulty being encountered as to reduction or maintenance of position. However, one exception may be noted: namely, the fracture with interposition of muscle preventing reduction. In these cases, efforts at reduction by traction and manipulation failing, open reduction by operation should be resorted to without delay. In such clean cases we have frequently been tempted to use internal fixation, particularly in fractures of the femur in which we feared a recurrence of the deformity during the necessary manipulations of the limb before the apparatus could be installed. Lane plates were usually employed for this purpose. Suspension and traction were used as in the cases without internal fixation and the results were all excellent and union was exceptionally rapid. It was evident from our experience that it was unnecessary to use Lane plates as large as those usually employed. In many cases a suture of catgut should suffice.

In compound fractures internal fixation should never be employed, as the insertion of foreign bodies not only promotes infection but increases necrosis of bone.

For the past year our methods, as employed in the military hospitals in France, have been applied on Dr. Hartwell's service at Bellevue Hospital by Drs. Kenneth Bulkley and J. N. Worcester, who were with me in France. Their results have been excellent, both automatically and functionally. Union has been rapid and the motions of the articulations have been normal at the period of consolidation and no after massage or passive motions have been necessary. Furthermore, as active motions were made by the patients during treatment, the muscles remained normal as to nutrition and function.

The objections to the suspension treatment is that it is too complicated and requires too much apparatus. One criticism I have read is that one must be a mechanic as well as a surgeon. This may be true, but it is questionable whether any one not so endowed should assume the responsibility of treating fractures. Undoubtedly, continual supervision and attention to details are necessary. Radiographs must be taken with the limb in suspension and consequently a portable apparatus is indispensable. The attendants should be specially trained and should be able to keep the slings in place and tighten them if necessary.

It is better, therefore, for the fractures to be segregated into separate or special services. Even special hospitals for large industrial centers are desirable. There is every reason that our great body of industrial wounded should benefit by all improvements in treatment, especially if the period of incapacity can be shortened.

With the old treatment by immobilization the time necessary for functional rehabilitation

usually equals and often exceeds that for consolidation. With suspension function never ceases and therefore there is a saving of nearly, if not quite, 50% in the period of incapacity.

The same principles are applicable in the treatment of injuries to joints, muscles and tendons as well as fractures and if generally applied to the treatment of our industrially wounded alone, which annually number close to three-quarters of a million, the benefit to them, their families and the increase in the productive power of the nation will be manifestly enormous.

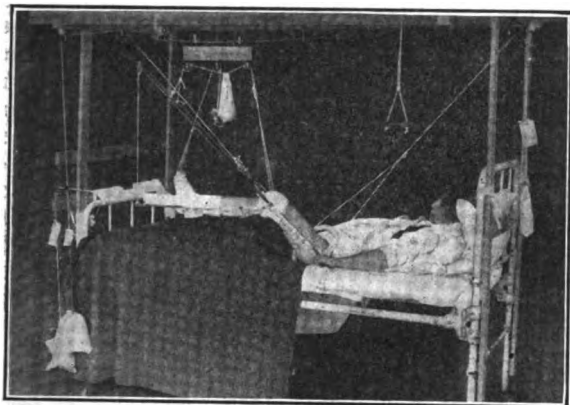


Fig. 1—Fracture of the left femur and of left tibia and fibula treated in suspension by means of the Thomas traction splint with Pearson's hinged supplementary leg piece attached to it.

Traction on the femur is made by tongs. The leg rests on the supplementary hinged piece which is in turn attached by means of a cord to the end of the Thomas splint, thus maintaining the proper angle of flexion at the knee.

Traction for the leg is made by means of glued bands by a cord running over a separate pulley to a separate weight from that attached to the cord attached to the tongs.

In this case the traction by tongs on the femur was 20 pounds and the separate traction on the leg 10 pounds; therefore, the total traction on the femur was 20 pounds, plus, on account of the angle of 45 degrees, about one-half the traction on the leg, making the total traction on the femur 25 pounds. This traction was found to be a little too great, a lengthening of one-quarter of an inch being obtained as the end result.

If there has been no fracture of the leg the proper arrangement of the apparatus would have been, in the early stage of treatment, to have run the cord from the end of the hinged leg piece through two pulleys attached to the suspension frame to a weight equivalent to the weight of the leg and foot, the pulleys being so arranged as to bring the weight within reach of the hand of the patient who would then be able

to move the hinged piece and leg up and down, thus carrying out motions at the knee joint.

As soon as union had commenced and the tongs had been removed, traction should have been applied by glued bands to the leg to two cords passing through two pulleys attached to the end of the leg piece, one cord passing up as above described, the other cord passing down. To the ends of these cords should be attached weights which together should equal the traction desired and which should be so apportioned that the weight in reach of the patient's hand should counter-balance the other weight plus the weight of the leg and foot.

DISCUSSION ON HEALTH CENTER BILL, STATE SANITARY OFFICERS' CONVENTION, SARATOGA, NEW YORK, SEPTEMBER 8, 1920,

By E. MacD. STANTON, M.D., F.A.C.S.

SCHENECTADY, N. Y.

LEAST of all do I admire those who are given too much to criticism. I will ask your pardon therefore, if in the few minutes at my disposal I appear to be mostly critical. I realize the great work being done by our State Department of Health and by the Health Officers of this state. If the time were at my disposal I could praise as well as criticize.

I am not by experience or special training qualified to express an opinion concerning many features of the proposed plan for state-subsidized health centers. I have, however, had a number of contacts with the propaganda being distributed by those in favor of the plan. I believe that all of you will agree with me that real progress must be based upon real truth. Real progress never comes from marshalling together a mass of false statements, or half truths, or even little truths in improper or false perspectives.

During the past two years it has fallen to my lot to spend considerable time in studying the relationships of the medical profession to the public in general. As a result of these studies I have come absolutely to the opinion that the medical profession has nothing to fear from the real truth concerning any problem relating to the practice of medicine. Also let me say that I believe that much of the difficult situation now confronting the profession is the direct result of misleading statements and propaganda fed to the public from medical and semi-medical sources. I regret to say that in my opinion some

of these misleading statements have come from our own State Department of Health and from others actively engaged in public health work.

By way of preliminary illustration let me mention just one type of statement and how it reacts against the medical profession. For a number of years I had read here and there statements to the effect that with the present development of medical knowledge about one half of sickness as it occurs in average communities is really preventable. Such statements seemed harmless enough and I attributed them to the over enthusiasm of some public health workers more interested in imparting their enthusiasm to others than they were in the fundamental biological factors controlling the situation. However, when I came to study the problem of compulsory health insurance this apparently innocent statement took on an entirely new significance. I was surprised to find that in the opinion of the public about four-fifths of the argument for so-called health insurance centers around the belief that according to the present development of medical science about one-half of disease could be readily prevented. The public argues thus. We are told by medical authorities—even by men representing the State Department of Health—that something like one-half of sickness as it now occurs is preventable. It is not prevented. Therefore, there is something radically wrong with medicine as it is now practiced. Mr. Andrews, Mr. Lapp and others tell us that compulsory health insurance will produce the desired results, therefore, let us have health insurance. Time and time again no matter where the argument starts this is the final picture that appeals to the lay public. As a matter of fact the very name health insurance is based on this misconception and in order to incorporate the alleged preventive medicine possibilities into the scheme it is practically stripped of all semblance of real insurance proposition.

Do the individual members of this audience really believe that with the human animal as he is now constituted and by the use of really practical means it would be possible to prevent anything like one-half of the sickness which actually occurs each year in your own communities? Search as I may I have never been able to find any data which would support such a claim. I can find much data both biological and medical which is directly opposed to any such claim. I believe that it is the duty of our State Department of Health to furnish us with a true picture as to just what are the proven possibilities of practical preventive medicine as they may relate to the average morbidity to be expected in New York State. It is the duty of the health officers of this state to demand that the department furnish them with such a picture because nothing can be more unjust to the medical profession than to infer that certain results could or should be accom-

plished when the cold hard facts do not support the assumption that these results could be accomplished even under ideal conditions. I regret to say that my very first contact with the propaganda for the health center project was to hear a representative of our State Department of Health quote the statement of a lay commission to the effect that properly organized medical service could reduce sickness by one-half.

Now let us turn again to the health center propaganda. A member of the State Department tells us that "experience has further shown that the best results in diagnosis and treatment can only be obtained by the co-ordinated efforts of a group of specialists working together." No one will accuse me of underestimating the value of group medicine. I have been in it all my life, but the propaganda for the so-called health centers does not put group medicine in its proper perspective. In the great majority of cases the real diagnosis must still depend upon the careful history and physical examination of one responsible physician. The family physician is and always must be the real backbone of medicine and I can not see how either he or the public is really going to be benefited by propaganda which infers that he is not capable of doing his work properly.

In a definitely inspired communication appearing recently in the *New York Times* we are told of the State Department's group diagnostic clinics and that "At the present time a rural physician who has a difficult or obscure case must send his patient to a large city to consult specialist after specialist and at a great expense before a diagnosis can be made." Was this statement the strict truth stated in its proper perspective? In Schenectady County we have an abundance of specialists and I believe that they are as well trained and use as good judgment in their work as do the specialists anywhere. It is inferred that the average man can not afford to consult these specialists. As far as I can ascertain any person in Schenectady County can have all ordinarily necessary examinations made for a total cost of about two pairs of shoes. In most cases it need be less than this. The exceptional case is like the swallow which does not make the summer. To describe the very exceptional case and exceptional specialist as representing the true condition of affairs is not fair to the great group of men who have given special time and special study to their work. Neither will it help to solve the problems of the practice of medicine.

In localities where specialists fees are too high the chief cause can usually be traced to the clinics. It is rather hard to get something for nothing in this world and when a community compels its medical men to give half of their time to clinics, then the other half to the community is of necessity compelled to pay double for what it gets.

On the next page of the paper I first referred to we are told that in cases of serious illness it costs \$25 and \$30 per day for medical attention. Is this the strict truth such as should be furnished to the lay critics of medicine as it is? As a matter of fact any one sick in Schenectady County can get very adequate hospital attention including nursing, laboratory examinations and care by their physician of choice for not over \$5 per day. Even in surgical cases the average cost of a four weeks' illness including surgeons' fees, hospital and accessory charges for our pay patients, unless they elect to have the luxury of a special nurse, is only about \$6 per day.

Is it strict scientific accuracy for us to have all this propaganda for state-subsidized so-called health centers without telling us how similar state subsidies have worked in other states? Surely such a simple scheme for a medical utopia and getting money from the taxpayers has not been overlooked in all of the states until 1920. This plan has been in operation for many years, more than a quarter of a century in Pennsylvania. I have lived in Pennsylvania and while I do not want to pass judgment as an expert my observations always led me to believe that it was bad for the doctors and worse for the public. One thing is sure and that is that after all these years Pennsylvania has fallen decidedly behind New York both in the relative number of physicians and the relative number of hospital beds available.

To my mind one of the most misleading statements which has been put forth in connection with the health center propaganda is that it is a complete answer to compulsory health insurance. This statement has been frequently made. From the experience of Pennsylvania I would say that it will tend to force rather than to prevent compulsory health insurance. As a matter of fact the proponents of the two plans are barking up different trees. The two projects do not cover the same ground. To my mind sickness insurance applied to the insurable portion of the sickness problem and stripped of the cure-all fallacies of trying to cover by insurance method the common run of short time illness, would be far preferable and more effective than the so-called health center plan.

We are told in the July *Bulletin* of the New York State Department of Health, page 195, that the health center plan as adopted in Erie County is a forerunner of *free health* by which is meant that rich and poor alike will some day enjoy the highest possible degree of medical skill with the cost spread on the general tax rate. This statement is printed in the official bulletin of our State Department. It is spread broadcast for layman as well as medical man to read. It will be quoted freely by all those paid secretaries and other parasites of modern society whose salaries depend upon their uplifting something or some-

body. The statement should represent the real truth, scientifically accurate as far as it could be in July, 1920. Is it the truth and is it accurate? There are 15,000 physicians in this state working on an average as hard as men can work efficiently. We need no less, we could use more. Certainly we could not induce 15,000 men to undertake the arduous years of training and expense necessary to become a physician without offering them a promise of an average gross income of at least \$6,000 each which would mean a net income of about \$3,500 per year. For a position under state medicine, minus the not inconsiderable satisfaction of a free occupation, I am sure that even the \$3,500 net would not be sufficient inducement. And yet do you realize that $\$6,000 \times 15,000 = \$90,000,000$. I for one do not believe that the human animal is so constituted that 10,000,000 of these beings in the State of New York will ever be induced to raise \$90,000,000 in taxes for just one item of this universal free medical care even though it be labeled under the absolutely false title of "free health."

I wonder if the *Bulletin* gives us the whole truth concerning "free health" under municipal medicine in Erie County. In the Canadian papers I have been reading advertisements of the Buffalo Department of Hospitals and Dispensaries offering pupil nurses an 8 hour day, no menial labor, all the usual inducements of a training school and \$20, \$25 and \$30 per month cash while in training. It might be very interesting to know what there is about the municipal free health plan of Erie County that necessitates their advertising such inducements to pupil nurses.

I venture to predict that when we organize the whole state on a plan that requires us to furnish board, room, clothing, teaching, training and \$20, \$25 and \$30 per month to pupil nurses in training that we will have some trouble inducing the taxpayers to foot the nursing expenses incident to the "Free Health" scheme. Also from my knowledge of the human animal as he is actually constituted I will venture to suggest that possibly about this time we might be compelled to offer \$50, \$60 and \$70 and \$80 to medical students while in college and that for recruits we could get a class of fellows who had doubts of their ability to earn their own living in freely competitive undertakings not associated with state subsidies.

In conclusion let me again state that I have no fears of real scientifically accurate truths concerning the practice of medicine. I do dread and somewhat fear the propagandist. I want to ask you of the New York State Sanitary Officers Association to see to it that the public is given only the real truth concerning one of the most vital points of contact between the physicians and the public—namely in regard to the practical possibilities of preventive medicine.

A BRIEF SURVEY OF THE HISTORY OF MEDICAL PRACTICE IN OSWEGO COUNTY.*

By E. J. DRURY, M.D.,
FULTON, N. Y.

TODAY the practitioner of medicine is a person in the duties of his calling so clearly defined from men of other vocations as to stand recognized by all as the follower of a special art. Such has not always been the case. Back in the venturous days when, with scant protection from the elements, men in what is now Oswego County were battling with the forests and their denizens, furl-clad or painted and plumed, the sick and the injured were, for the most part, attended by some fellow voyager or settler whose ingenuity and experience made him able to render some assistance. The first to come to America lived without the help of physicians, but soon venturesome practitioners followed the lure of the setting sun, some of them men of ability, all men of action. Apparently the first of these to come, but only for a temporary stay, was Dr. Thomas Wootton, Surgeon-General of the London Company, who landed at the settlement of Jamestown, Virginia, on May 13, 1607. Dr. John Pot came to Virginia in 1611 or 1612 and seems to have been the first physician to permanently locate in the new land, in 1628 becoming Governor of Virginia. Dr. Samuel Fuller, who came on the *Mayflower*, was the first physician in New England. That these early pilgrims were men of parts is proven by their activities in the public interest, a second one becoming the Governor of his colony, Dr. John Winthrop, Jr., of Connecticut.

In the early days of the colonies a goodly percentage of practitioners were graduates of recognized medical schools, but many gained their knowledge through the custom of "reading medicine" with some established physician. "Native talent and industry often make large amends for defective education, and many of these apprentices doubtless proved as successful physicians as some of their more fortunate colleagues who boasted an M.D." from some accredited college. (Bass' "History of Medicine.") Whether the student enjoyed the ad-

vantages of a school of medicine or gained his lore in some more primitive way, the roughness of the early path to medical knowledge may be suspected from reading these words from the recommendations of the Massachusetts General Court of 1647: "We conceive it very necessary yt such as studies physick or chirurgery may have liberty to reade anotomy & to anotomize once in four years some malefactor, in case there be such as the Courte shall allow of." (Bass' History of Medicine.)

In the earliest days conditions of practice were in great contrast to those of today. "The physician, with a scanty and defective stock of drugs and a still less complete armamentarium of instruments, was called, perhaps at midnight, to ride many miles through an almost pathless forest, and to treat not only cases of disease, but fractures, dislocations, arrow wounds, gunshot wounds and all the accidents incident to frontier life. Hence he was required to be above all a ready man, willing and able to render prompt assistance in all sorts of emergencies. In the lack of regular medicine he was often compelled to experiment with, and to rely upon, indigenous remedies, and to devise surgical apparatus of the homeliest pattern. All this stimulated that tendency to 'practical' objects which has become in recent times the chief glory of American medicine." (Bass' "History of Medicine.") Nor were controversies wanting, as is shown by the authorities of what is now our great metropolis:

"On the petition of the chirurgens of New Amsterdam, that none but they alone be allowed to shave, the director and council understand that shaving doth not appertain exclusively to chirurgery, but is an appendix thereunto; that no man can be prevented operating on himself, nor to do another the friendly act, provided it be through courtesy and not for gain, which is hereby forbidden." (Bass' "History of Medicine.")

Today, when the physicians of our county and of our country are forced to such deep interest in the legislative trends affecting the relationship of the practitioner to his clientèle, it is interesting to note that in America the opening wedge in the drive for State medicine was in 1669, when the taxes of Henry Taylor, a surgeon of Boston, were remitted "in consideration of his agreement to attend the sick poor."

* Read at the one-hundredth annual meeting of the Medical Society of the County of Oswego, Oct. 12, 1920.

In early days the custom of having a physician or "chirurgion" connected with an advance settlement or trading post seems not to have been followed in the territory comprising Oswego County, doubtless because of the relatively small numbers of the garrisons and the few settlers. Apparently the first physician to locate in Oswego County was Dr. Enoch Alden, who came to Redfield in 1801. There seems to be no existing evidence of other settled practitioners before about 1806. In that year and shortly thereafter several located in this territory; in 1806 Dr. Deodatus Clarke was the first in Oswego Village; in 1807 Dr. Bissell in Fulton; then Dr. Tennant in Colosse, Dr. Porter in Richland; in 1810 Dr. Isaac Whitmore in Pulaski, and Dr. James A. Thompson in Sandy Creek in 1815. It is interesting to note that the first use of the term doctor as applied to a practitioner of medicine in the Colonies occurred less than fifty years before Dr. Deodatus Clarke came to Oswego.

Many stories of the work and character of some of the old-time physicians can still be dug up. In the early days of Oswego a local practitioner was called to deliver a woman who lived in a clearing, the present Lathrop property on West Eighth Street, outside of the village. His pay was taken in fresh beef delivered at intervals throughout the following winter and in quantity sufficient to supply his family for many weeks. Another took his pay in fish until the word fish was anathema to his soul. Reference to the day book kept in 1858 by Dr. John Tyler, a country practitioner in the Township of Richland shows that the usual office fee with him was 25 cents, house calls 50 cents, maternity attendance \$3.00, and medicine furnished usually 13 cents, the most common charges appearing on the books being 38 cents and 63 cents. Many physicians now living recall charges almost as low.

In 1806 the Legislature of New York State passed a law authorizing the formation of County Medical Societies, and in 1821 the physicians of this county availed themselves of the privileges of this law and founded the Medical Society of the County of Oswego, Dr. Benjamin Coe, of Union Village, now Fruit Valley, being the first president. From the first the Society was a strong one and always conservative. Its final legal incorporation occurred in 1900.

Twice the records of the Society have been destroyed by fire, and now exist in consecutive form only since 1872. The first meeting of which I have account was in 1848, when there were thirty-five members. Elected to the Society in company with Dr. P. M. Dowd in May, 1879, I well recall the first meeting I attended, held in the old Doolittle House,

Oswego, in December of that year. Of the twenty-nine members present only four survive: Dr. G. G. Whitaker, who joined in 1866; Dr. J. K. Stockwell, whose membership dates from 1871; Dr. Dowd and myself. The others have passed; the gentlemanly Dr. Coe, good-natured Lawrence Reynolds; C. C. P. Clark, whose record is one of the grandest legacies a man can leave behind; Drs. Pardee, Kingston, Hamill, Bacon, Greene, Mattoon, Bates, Dayton, Haven, Low, Lee, Jones, Eddy and others, men over whose mortal bodies the cold portals of the tomb have forever closed, but without shutting out the memory or obscuring the brightness of their counsel and friendship. Let the examples of such men, the fathers of our profession, be ever cherished. We regret the passing of life, the loss of those whose friendship and counsel have carried us through times of strain and trouble. They have left to us their legacy, the care of this living monument. How soon will nothing be known of them except what can be gleaned from the records of this Society.

A survey of the existing minutes of the Society shows a surprisingly large attendance percentage. Probably most notable of all is the personal record of the late Dr. C. G. Bacon, of Fulton, who was admitted to membership in 1842. He attended over fifty consecutive meetings, last appearing in 1905 at the Eighty-fifth Annual Meeting, and in 1906 joining "that innumerable band from whose bourne no traveler ever returns."

The Homeopathic Medical Society of the County of Oswego was organized in 1861, but with the Eclectic County Society, which had its origin in 1865, it has passed out of existence. At one time the latter organization had a membership of forty-five. In Oswego and Fulton active and militant Academies of Medicine help in maintaining good feeling and efficiency among the physicians.

The county maintains a hospital department in its almshouse. Well-equipped hospitals, conducted by eleemosynary private corporations, are established in Oswego and Fulton, while in the Township of Orwell the county maintains one of the most perfectly equipped institutions for the tubercular to be found in America.

Time makes it impossible to go more minutely into the progress of medicine in Oswego County. The history of the Medical Society of the County of Oswego practically covers the more important parts of all medical activities in the county. We are gathered in celebration of the passing of one hundred years, a century of good-fellowship and progress. May the next century show loyalty as true, progress as great.

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Editorials.**HEALTH CENTRE LEGISLATION**

DURING the last session of the New York Legislature a bill was introduced for the establishment of Health Centres throughout the State. After considerable discussion and the addition of numerous amendments, this bill was finally withdrawn. It has been stated that a similar law will be proposed to the next Legislature, and the officials of the State Department of Health have announced their intention to urge the passage of this measure. Their deputies have been sent to District Branch meetings of the State Society and to County Society meetings; they have encouraged discussion of the proposed law in other ways and are spreading propaganda in its favor. It is, therefore, reasonable to expect that some form of Health Centre legislation will be attempted during the coming winter.

The exact form of the new bill is problematical, the only existing guide being the Sage-Machold Bill of last year. This measure proposed to establish Health Centres in the counties and cities desiring them, these including hospitals, laboratories, X-ray plants, district nursing, child welfare work, etc. The entire plan to be under the supervision of the State Commissioner of Health, and the expense to be shared by the county or city and the State. No community was obligated to adopt the plan; it could be adopted in part if desired and it could be rescinded. In fostering the proposed law, the State Department of Health presents a constructive plan to meet certain conditions believed to exist. It is claimed that rural districts have a much smaller number of physicians than formerly, that young men are not settling in the country in sufficient numbers to replace the older ones lost by retirement or death, and that in consequence mortality is greater in rural than in urban localities. It is further claimed that the establishment of these Health Centres will encourage physicians to settle in rural districts, with consequent adequate and more efficient medical care for the people, the advantage of group practice for the physician and the advance of the medical art.

The State Department of Health is at present not committed to any definite plan; it is anxious for the support of the medical profession and invites helpful suggestions and criticisms. The scheme doubtless has both merit and disadvantages, and if enacted will be far-reaching in its effect both as regards the status of the physician and the relationship between the profession and the public.

The above brief reference is sufficient to indicate that the subject demands the immediate

serious attention of the profession. It should be freely, thoroughly and intelligently discussed from every point of view. The President and the Secretary of the State Society have brought the matter to the attention of the profession in many parts of the State, and the Committee on Economics has asked all the County Societies to consider the matter and to take action concerning it.

This is an additional call to duty addressed to every member of the State Society, to see that every County Society makes the fullest survey possible and then records the result in order that your officers may present the consensus of opinion of the profession of the State at the proper time and place.

EDWARD LIVINGSTON HUNT.

DELEGATES.

FROM time to time an executive body is elected by the County Medical Society for the purpose of caring for the routine business of the Society and shaping its policy under the guidance and with the approval of the membership. This task usually has the serious attention of members in general, who feel responsible for their selections and are later in position to judge if these were correct.

Usually at the same time they elect delegates to the State Society. Not being in position to know if these delegates actually attend, or to judge the character of their work, this selection deserves even greater care. These delegates to the State Society aid in the selection of delegates to the American Medical Association, also a very important function to secure proper representation for the State in the National body.

Experience teaches that the task thus entrusted is in the main faithfully and conscientiously carried out, but there is rarely a session at which one or more delegates from County or State do not come at all, and of those who come to the meeting, one or more yield to the lure of a golf course or to entertainment by some generous local host, at the expense of the efficiency of the delegation. It has happened that men have allowed themselves to be elected to fill these positions who knew at the time that they could not attend the meeting at which they were to serve.

If the members of the County Society will take a moment to realize the importance of the matter in which their representatives aid in expressing the opinion of the profession of the State or Nation, they will appreciate that these positions merit the selection of members who are qualified by training and position to deal seriously, correctly and quickly with the problems liable to arise. Every delegate to the State Society is a potential delegate to the National Society. The opening words in the

address of the Speaker of the House of Delegates of the American Medical Association well illustrate this opinion:

"Again it is my pleasure to convene this body of selectmen from the membership of the Association. By common consent, reduced to Constitution and By-Laws, this House of Delegates is the governing branch of the Association—the machinery which correlates the scientific product of the annual meetings. You work under articles of government which you amend or abrogate at will. No co-ordinate branch of the Association may direct or compel beyond your pleasure. All of its officers are elected, and their duties defined by you. This recapitulation is intended to recall to mind your prerogatives and responsibilities in the art of government."

The minutes of the last meeting of the House of Delegates of the American Medical Association may serve as an index of the usual labors of such State and National assemblies. This document covers fifty-two closely printed pages considerably larger than those of this JOURNAL, and the comprehensive character of the proceedings is indicated by a table of contents showing over 500 topics. While it will serve no purpose to detail these activities here, a brief survey of some of the subjects considered will prove the importance of having our able men as representatives at these meetings.

The Treasurer's report shows a gross annual income of around \$800,000, the administration of which lies in the hands of men indirectly selected by you. Constantly broadening activities of the Board of Trustees, Council on Health and Public Instruction, Council on Medical Education and Hospitals, Council on Scientific Assembly, and many special committees are measured in scope and effectiveness by you, in the men you select for this purpose. Consider for a moment the importance of the following selected at random:

Publication Activities of the Board of Trustees.

Propaganda Department.

Medico-Legal Relations of Physicians.

Vital Statistics Legislation.

Protection of Scientific Research.

Social Insurance.

Narcotic Drug Situation.

Status of Medical Education.

Improving Hospital Service.

Graduate Medical Education.

Vocational Teaching of Medicine.

Are these not among the greatest questions medical men as a class have been asked to solve, and the wisdom and effectiveness of their solution rests largely with the men selected by the County Society as delegates to the State Society.

ANNUAL REREGISTRATION.

THE State Educational Department has for some years given serious attention to the problem of the elimination of the illegal practitioner of medicine, and as the result of this study has proposed an annual re-registration law for physicians. By virtue of such law it is believed that all persons not properly licensed can easily be traced, which will lead either to abandonment of practice on their part or certain conviction and punishment. Laws similar to the one proposed for physicians have been adopted for veterinarians and dentists, with splendid results, it is said, in the elimination of irregular practitioners in these professions. The House of Delegates of the Medical Society of the State of New York have endorsed this proposed measure, and in consequence it should be the duty of the members of the Society to support the bill when it is introduced in the Legislature.

A survey of the situation, however, demonstrates that not only the physicians of the State but also the members of the State Society are by no means in accord in this matter, and this indicates that it is the duty of every physician to study the subject in order that an opinion may be justified. On the whole, it may be said that the physicians in the counties of Greater New York are to a large extent bitterly opposed to the measure, while those in all other portions of the State are generally enthusiastically in favor of it. This is probably explained by the relatively satisfactory relief from illegal practitioners obtained in the larger centres by the legal departments of the County Societies, which has not been possible in the smaller centres on account of the high cost of this work.

A recent news item states that at the annual meeting of the New Jersey State Medical Society, held in June last, the endorsement of an annual re-registration act for physicians, proposed by the Trustees of the Society, was defeated by the House of Delegates. The Illinois State Society has also expressed disapproval of the plan, and it is condemned in no uncertain terms in the recent numbers of their State Society Journal.

In brief, the principle of the proposed law as generally explained, is to require annual re-registration of physicians, this allowing the preparation of an annual list of legal practitioners. This list will immediately decide if a given person is licensed or not, and in the latter case, the absence of license is in itself sufficient evidence to convict of illegal practice.

Without any desire to question the effectiveness of this measure, it may be instructive to call attention to the difficulty of dealing with these cases under the present law. In most instances it is now a simple matter to prove that

the illegal practitioner is not registered, except in the relatively few cases where such person is practising on the diploma and license of a dead physician. The difficult and costly task at present is to prove to the satisfaction of the Court that the illegal practitioner is actually practising medicine. This requires positive evidence of medical or surgical treatment given by the person so treated, and it is not as yet satisfactorily evident in what way the proposed law will simplify this task. It must not be forgotten that the fees resulting from annual re-registration will create a fund to be used for this purpose by the Attorney General, relieving the County Societies from this task and burden, though the assessment to be effective must be a relatively large one, as it is said the State will not contribute funds for this purpose. It would be fortunate if the proposed law could in some way make easier the actual task of proving that the non-registered person is practising medicine.

While the general principles involved in the proposed measure are briefly as stated, the specific details of the bill are not yet known. The fact remains that every physician should now inform himself concerning the matter in general, and on the specific details of the bill as soon as these are known. The House of Delegates of the Medical Society of the State of New York have instructed the committee concerned that the measure has the support of the Society.

THE LEGISLATURE.

THE election has been held and the Governor and many legislators have been elected according to the choice of the majority of the people. It now becomes the duty of the medical profession to seek acquaintance with this lawmaking body, to aid it in the study of problems concerning public health, preventive medicine and the maintenance of professional standards and dignity. The necessary laws in this regard should be suggested and every aid given to secure their passage—in other words, the profession should undertake a constructive legislative policy, helpful to the lawmakers and certain to command the respect and confidence of the public, the profession as a whole and the Legislature.

Acquaint yourself with the full meaning of proposed laws, weigh carefully the expressed opinions concerning them, and then use all possible facilities in what you believe the right direction, with the same zeal as if the matter were one of grave personal concern. See personally those of the lawmaking body you know and write short, forceful appeals to the others. Let us in this way convince the government that the medical profession is virile and in favor of only what is best for the people as a whole.

Medical Society of the State of New York.

COMMITTEE ON PRIZE ESSAYS

The Committee on Prize Essays, of the Medical Society of the State of New York take pleasure in announcing that the Merritt H. Cash prize of \$100 for essays on some subject relating to general medicine and surgery, and the Lucien Howe prize of \$100 for essays on some branch of surgery, preferably ophthalmology, will be awarded by the Medical Society of the State of New York at the next annual meeting—in Brooklyn, May 3, 1921.

Essays should be in the hands of the Chairman, Dr. Albert Vander Veer, 28 Eagle Street, Albany, N. Y., not later than April 1st.

ALBERT VANDER VEER, Chairman;
EDWARD D. FISHER,
CHARLES G. STOCKTON,
Committee.

PAPERS FOR THE STATE MEETING

The officers of the Eye, Ear, Nose and Throat Section invite any who expect to be present at the meeting in Brooklyn during May, 1921, to submit titles of papers. It is especially desired to have papers from men who have never appeared on a State program before. The men in Greater New York are expected to provide clinics both diagnostic and operative. Those living outside of the greater city can do their part by reading papers. If possible, please send in your titles *at once* as we wish to have a tentative program ready by January 1st at the latest.

ALBERT C. SNELL, *Chairman*,
IRVING WILSON VOORHEES, *Secretary*,
13 Central Park West.

District Branches

FIRST DISTRICT BRANCH.

ANNUAL MEETING, POUGHKEEPSIE, N. Y.,
THURSDAY, OCTOBER 21, 1920.

The Fourteenth Annual Meeting of the First District Branch was called to order at 11:10 A. M., at the Vassar Brothers Institute, by the President, Dr. Hulett. The Secretary not being present, Dr. I. Redfield was appointed Acting Secretary.

Dr. Card, moved that a nominating committee be appointed, seconded by Dr. Irving D. LeRoy.

The Nominating Committee reported as follows: President, George A. Leitner; 1st Vice-President, Edward C. Rushmore; 2nd Vice-President, John A. Card; Secretary, Charles E. Denison; Treasurer, John T. Howell.

On motion the Secretary was instructed to cast an affirmative ballot.

SCIENTIFIC SESSION.

"Hypothyroidism," Daniel B. Hardenbergh, M.D., Middletown.

Discussion by Drs. Redfield, Winter, Sadlier, Waldron, and Dunning.

"Health Center Insurance," Joseph B. Hulett, M.D., President, First District Branch, Middletown.

"The Future Position on Health Centers and the Part the State Society Should Assume," J. Richard Kevin, M.D., President, Medical Society of the State of New York, Brooklyn.

"Unappreciated Agencies in the Defective Development of Children," Charles Gilmore Kerley, M.D., New York City.

"Syphilis of the Nervous System in Children," Edward Livingston Hunt, M.D., Secretary, Medical Society of the State of New York, New York City.

Discussion by Drs. Card, Stark, Winter, L. M. Silver, and Sadlier.

"Health Center Bill," Charles C. Duryea, M.D., Schenectady.

Discussion by Drs. Kevin, Redfield, Winter and Davin.

"Direct Hernia," J. P. Hoguet, M.D., New York City.

"Encephalitis Lethargica," Henry Lyle Winter, M.D., Cornwall.

Discussion by Drs. Wallace and Stark.

County Societies

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

REGULAR MEETING, ROCHESTER, N. Y.,
TUESDAY, OCTOBER 19, 1920.

The meeting was called to order by the President, Dr. Ruggles.

The following resolution was presented by Dr. F. Dow: "The Medical Society of the County of Monroe is of the opinion that the present laws relative to registration of births are ineffective and should be amended so as to provide for the registration of all births." Seconded and carried.

Moved by Dr. Hennington, that a Committee be appointed to take action on the above resolution.

The President appointed Dr. Dow.

The Secretary read a letter from the Committee on Compulsory Health Insurance referring to the Sage-Machold Health Center Bill.

Moved that "The Medical Society of the County of Monroe is opposed to the Health Center Bill."

The Secretary read a letter from the Chairman of the Committee on Medical Economics of the State Society.

Moved, seconded and carried that the President appoint a Special Committee on Economics to act with the committees of other County Societies.

The President appointed Drs. O. E. Jones, H. L. Prince and J. R. Booth.

The following nominations were made to be voted on at the December meeting:

President, George H. Gage; Vice-President, Charles O. Boswell; Secretary, B. J. Duffy; Treasurer, Irving E. Harris; Delegates to State Society, Floyd S. Winslow, James P. Brady, B. J. Duffy; Alternates, John R. Booth, George A. Marion, Irving E. Harris; Censors, Eugene H. Howard, Owen E. Jones, James P. Brady, Floyd S. Winslow, James M. Flynn, E. Wood Ruggles, John R. Booth, Seelye W. Little, Irving L. Walker and Charles C. Sutter; Milk Commission, Arthur M. Johnson, Albert D. Kaiser.

The paper of the evening entitled "Colles Fracture" was read by Lee A. Whitney, M. D., Rochester.

Discussions by Drs. Wentworth, Cook, Slater, McCauley and Bowen.

ESSEX COUNTY MEDICAL SOCIETY

ANNUAL MEETING, PORT HENRY, N. Y.,

TUESDAY, OCTOBER 5, 1920.

In the absence of the President and Vice-President, the meeting was called to order by the Acting President, Dr. Sherman.

On account of the absence of a quorum at the beginning of the session, election of officers was omitted and the present officers will hold office for another year.

Owing to the unavoidable absence of the President, Dr. Evans, the Presidential address, "Needs of the Medical Profession in Essex County," was read by William T. Sherman, M.D.

"Tuberculosis," Edward R. Baldwin, M.D., Saranac Lake.

"Consultation Clinics," Edmund G. Boddy, M.D., State Department of Health.

Owing to the absence of Dr. L. G. Barton, Sr., his paper on "Treatment of Movable and Floating Kidneys," was read by Dr. Barton, Jr.

"District Nursing," Miss Mathilde S. Kuhlman, Director of Division of Public Health Nursing, State Department of Health.

A rising vote of thanks was given to the speakers.

MEDICAL SOCIETY OF THE COUNTY OF ERIE.

REGULAR MEETING, BUFFALO, N. Y.,

MONDAY, OCTOBER 18, 1920.

In the absence of the President, the meeting was called to order in the University of Buffalo by the First Vice-President, Dr. Bennett.

The Secretary read the minutes of the previous regular meeting held June 21st, and the minutes of the Council meetings of August 27th and October 15th, which were approved as read.

Dr. Bonnar reported for the Board of Censors, that about eight varieties of violations against medical malpractice laws were at the present time under consideration. He expected to be able to make a full report at the next meeting.

The Chairman, Committee on Membership, recommended the following for election: Drs. R. L. Cameron, Elmer L. Dane, Morris L. Pollock, Rose M. Lascola, Francis J. Haley, Carl Leutenegger, Emmett B. Dunlay, Warren L. Gipple and Ernest B. McAndrew, also Dr. James J. Mooney for reinstatement.

On motion duly seconded and carried they were declared elected.

The following nominations were made: President Arthur G. Bennett; 1st Vice-President, DeWitt H. Sherman; 2nd Vice-President, Thomas J. Walsh; Secretary, Franklin C. Gram; Treasurer, Albert T. Lytle. Moved that the 1920 Censors be renominated for 1921. Dr. Bennett withdrew his name, stating that as he had served on this Board for a number of years, and he was nominated for President, he declined to run for the office of Censor.

On motion of Dr. Bonnar, Dr. Charles W. Bethune was nominated in place of Dr. Bennett, the other Censors to remain the same. Delegates to State Society: Dr. Clark nominated Francis E. Fronczak, in place of Harry E. Trick, who is a State officer and member of the State Council by virtue of his office as President of the Eighth District Branch. On the same motion the outgoing delegates were renominated.

The following Chairmen were nominated: Legislation, Harvey R. Gaylord; Public Health, Charles A. Bentz; Membership, Jesse N. Roe; Economics, Thomas J. Walsh.

Dr. Kevin, President of the State Society gave an address on the work of the State Society.

Dr. Hunt, Secretary of the State Society presented a paper on the Health Center Bill.

Discussed by Walter S. Goodale, M.D., Buffalo.

Dr. Francis E. Fronczak, Health Commissioner of Buffalo, spoke in opposition to the Health Center Bill.

Dr. DeLancey Rochester favored the Health Center Bill and especially the methods employed by the Bureau of Hospitals and Dispensaries of Buffalo, and the results thus far obtained. He was emphatic in stating that group medicine is the medicine of the future and if properly applied will add rather than detract from the practice and income of the regular practitioner.

Dr. Edward Clark, Sanitary Supervisor of the State Department of Health, agreed with Dr. Rochester. He said that this was not a question of pauperizing people, nor depriving medical practitioners of a living, that the results and effects would be the same as a tuberculosis law, or the law which provided adequate treatment and protection for the insane. The Health Center Bill is intended primarily to supply the needs of such localities in the State as are now without adequate medical protection and help.

Dr. John H. Pryor agreed with Dr. Fronczak and was against the Health Center Bill. He stated that this bill was one of the outputs of Welfare Workers, who find it necessary to branch out in order to maintain employment. The State Commissioner of Health, according to this bill, would select and provide the experts for diagnostic clinics and it would be a local wedge for State medicine.

The next paper on the program was "What Buffalo is doing for its Children," by Dr. DeWitt H. Sherman. but owing to the lateness of the hour Dr. Sherman asked that he be permitted to read this paper by title only. Request was granted.

After adjournment a collation was served in the library.

MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN.

ANNUAL MEETING, LIBERTY, N. Y.,

WEDNESDAY, OCTOBER 13, 1920.

The following officers were elected for the ensuing year: President, Stephen W. Wells; Vice-President, Leopold Rosenberg; Secretary and Treasurer, Harriet M. Poindexter; Censors, Emanuel Singer, J. Cameron Gain, Cornelius Duggan, John A. Miller, Harriet M. Poindexter.

In the Scientific Session, papers were presented by Drs. Andrew Peters and Luther Emerick.

COLUMBIA COUNTY MEDICAL SOCIETY

ANNUAL MEETING, HUDSON, N. Y.,

THURSDAY, OCTOBER 14, 1920.

The following officers were elected for the ensuing year: President, Sherwood V. Whitbeck; Vice-President, Henry C. Galster; Secretary and Treasurer, Charles R. Skinner; Censors, Louis Van Hoesen, Clark G. Rossman, Hamilton M. Southworth, Roscoe C. Waterbury, Charles L. Nichols.

The scientific meeting consisted of the program prepared by the Third District Branch, which was guest of the Columbia County Society.

Sixty-eight sat down to the luncheon.

THE MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS.

FOURTH QUARTERLY MEETING, OLEAN, N. Y.,

TUESDAY, OCTOBER 5, 1920.

The meeting was called to order and the following scientific program was presented:

"Digest of 1,180 Cases Seen in Army Service," Clarence A. Greenleaf, M.D., Olean.

"Classification and Diagnosis of Thyroid Disturbances," Charles W. Webb, M.D., Clifton Springs.

"Pathology of Thyroid Disease" (Illustrated), Walter Thomas, M.D., Clifton Springs.

WAYNE COUNTY MEDICAL SOCIETY.

QUARTERLY MEETING, PALMYRA, N. Y.,
TUESDAY, SEPTEMBER 14, 1920.

The meeting was called to order by the President, Dr. Nevin.

The minutes of the preceding meeting were read and approved as read.

A communication from the Committee on Compulsory Health Insurance and Workman's Compensation Insurance of the Medical Society of the County of New York was read regarding the proposed Health Center Bill. The Secretary was directed to answer it.

The following officers were placed in nomination for the ensuing years: President, Charles H. Bennett, Sodus; Vice-President, Robert S. Carr, Williamson; Secretary and Treasurer, L. H. Smith, Palmyra.

SCIENTIFIC PROGRAM.

"Problems in the Diagnosis of Gastric Conditions," Samuel A. Munford, M.D., Clifton Springs.

"Present Day Conception of Present Day Blood Examinations," W. S. Thomas, M.D., Clifton Springs.

"The Relation of Focal Infection to General Medicine," Austin G. Morris, M.D., Rochester.

The general discussion followed.

A vote of thanks was tendered to Drs. Munford, Thomas and Morris.

MEDICAL SOCIETY OF THE COUNTY OF WARREN.

ANNUAL MEETING, GLENS FALLS, N. Y.,
WEDNESDAY, OCTOBER 13, 1920.

The meeting was called to order in the City Hall, the following officers were elected for the ensuing year: President, Henry E. Clarke, Glens Falls; Vice-President, John M. Griffin, Warrensburg; Secretary and Treasurer, LeRoy J. Butler, Glens Falls; Delegate to State Society, Morris Maslon, Glens Falls.

SCIENTIFIC SESSION.

"Epidemic Encephalitis with Particular Reference to the So-called Lethargic Type," Thomas Ordway, M.D., Albany.

"Health Centers," Charles C. Duryee, M.D., State Department of Health, Schenectady.

MEDICAL SOCIETY OF THE COUNTY OF OSWEGO.

ANNUAL MEETING, OSWEGO, N. Y.,
TUESDAY AND WEDNESDAY, OCTOBER 12-13, 1920.

The meeting was called to order in the State Normal School.

The following officers were elected for the ensuing year: President, Louise DeL. Pulsifer, Mexico; Vice-President, William H. Conterman, Central Square; Secretary, Walter H. Kidder, Oswego; Treasurer, Joseph B. Ringland, Oswego; Censors, LeRoy F. Hollis, Emory J. Drury, Pascal M. Dowd, Jeremiah T. Dwyer, Arthur W. Irwin.

The members of the Society were requested to give careful thought to the coming legislative activities, and especially to inform themselves regarding the so-called Health Center measures, so as to be prepared to take up these questions at a special meeting to be held later in the fall.

SCIENTIFIC SESSION.

President's address, Frank E. Fox, M.D., Fulton.

"A Brief Survey of the History of Medical Practice in Oswego County,"* Emory J. Drury, M.D., Fulton.

"The Future Physician," J. Richard Kevin, M.D., President, Medical Society of the State of New York, Brooklyn.

"The Management of the Circulation in Acute Disease," John H. Carroll, M.D., Oswego and New York.

* For paper, see page 362.

"Types of Goitre Which Should Receive Medical Treatment," Donald Guthrie, M.D., Sayre, Pa.

"The Recent Advances in Obstetric Practice," John Osborn Polak, M.D., Brooklyn.

"The Importance of Recognizing and Treating Neuro-Syphilis in the Secondary Period of Infection," John A. Fordyce, M.D., New York.

"Evaluation of the Allen Method of Treatment of Diabetes Mellitus," John R. Williams, M.D., Rochester.

"Nitrous Oxide and Oxygen Anaesthesia," John J. Buettner, M.D., Syracuse.

In addition to the regular program, Miss Otis of the faculty of the State Normal School gave a brief talk, explaining the work of her department in educating teachers to engage in the training of the mentally sub-normal.

Later the visiting physicians were taken to inspect the equipment and work of this department.

On Tuesday evening the Society gave a dinner at the Hotel Pontiac, at which over one hundred members and guests were present.

During the evening the Hon. Elon R. Brown of Watertown, Hon. Luther T. Mott of Oswego, Dr. J. Richard Kevin, Brooklyn, and Dr. John Van Duyn, Syracuse, gave interesting addresses.

Dr. Van Duyn spoke briefly of many of the older practitioners of Oswego County whom he had known years gone by, Dr. Van Duyn having been for more than half a century in touch with the members of this Society.

Songs and piano numbers were given by Professor Riley and Mr. Stephen Haley.

The attendance at the meeting was representative of physicians of the highest type, some driving long distances to the meeting.

Although the number present was not large the Centenary Meeting was a decided success.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

ANNUAL MEETING, HUDSON FALLS, N. Y.,
TUESDAY, OCTOBER 5, 1920.

The meeting was called to order at 11 A. M.

The minutes of the last meeting were read and approved.

The President named Drs. Pashley, Stillman and Park as nominating committee, and the following officers were nominated and elected for 1921: President, Walter A. Leonard, Cambridge; Vice-President, Russel C. Paris, Hudson Falls; Secretary, Silas J. Banker, Fort Edward; Treasurer, Samuel Pashley, Hudson Falls; Censors, George M. Casey, Harry S. Blackfan, Clifford W. Sumner.

Dr. Paris, having expressed the desire to be relieved of the office of Treasurer, was given a rising vote of thanks for his ten years of faithful service.

SCIENTIFIC PROGRAM.

"The Value of Cystoscopy in the Diagnosis of Bladder and Kidney Diseases" (Illustrated by lantern slides), James N. Vander Veer, M.D., Albany.

"The Importance of Isolation in the Treatment of Influenza by Comparison of Those Treated in the Wards of the Hospital and Those Treated in Cells," Harley Heath, M.D., President Medical Society of the County of Washington, Comstock.

Dr. Park reported for the Committee on the Ethics of the Mary McClellan Hospital. Report received and placed on file.

"Health Insurance," Edwin MacD. Stanton, M.D., Schenectady. A motion was adopted to appoint a Committee to meet in conference on this subject.

The President appointed Drs. Cuthbert and Munson.

A rising vote of thanks was tendered Drs. Vander Veer and Stanton.

The following resolution recommended by Dr. Stanton was presented by Dr. Munson:

Resolved, that in the opinion of the members of the Medical Society of the County of Washington, the State Society should proceed at once to the employment of a paid Executive Secretary as provided by a resolution already passed by the House of Delegates.

Dr. Pashley reported for the Committee on Vice-President's address on State Society Medicine, that the proposition was not the remedy for the present difficulties.

Dr. Vander Veer presented the subject of the Yearly Registration of Physicians, which was generally discussed.

MEDICAL SOCIETY OF THE COUNTY OF SARATOGA.

ANNUAL MEETING, SARATOGA SPRINGS, N. Y.,
THURSDAY, OCTOBER 28, 1920.

The following officers were elected for the ensuing year: President, Frederic J. Resseguie, Saratoga Springs; Vice-President, Patrick J. Hirst, Middle Grove; Treasurer, John B. Ledlie, Saratoga Springs; Secretary, Ralph B. Post, Ballston Spa; Censors, George F. Comstock, Frederick G. Eaton, Horace J. Hawk; Delegate to State Society, George S. Towne.

Following the business session, the subject of "The Health Center Project" was presented by Frederick W. Sears, M.D., Syracuse.

SUFFOLK COUNTY MEDICAL SOCIETY.

ANNUAL MEETING, RIVERHEAD, N. Y.
THURSDAY, OCTOBER 28, 1920.

Twenty-seven members were present.

Moved, seconded and carried that a new fee list be adopted.

The following officers were elected for the ensuing year: President, Edwin S. Moore, Bay Shore; Vice-President, John W. Stokes, Southold; Secretary, Frank Overton, Patchogue; Treasurer, John W. Bennett, Patchogue; Censors, Joseph H. Marshall, Guy H. Turrell, James S. Ames; Delegates to State Society, Frank Overton, Clarence C. Miles.

SCIENTIFIC SESSION.

President's address, David Edwards, M.D., East Hampton.

"Exhibition of X-Ray Plates," Henry H. Thorp, M.D., John W. Stokes, M.D., William H. Ross, M.D.

"A Case of Acute Pancreatitis," William H. Ross, M.D., Sayville.

"The Health Center Bill," Guy H. Turrell, M.D., Smithtown Branch.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

SHORT TALKS ON PERSONAL AND COMMUNITY HEALTH.

By LOUIS LEHRFELD, A.M., M.D., with Introduction by WILMER KRUSEN, M.D., LL.D. Price \$2.00. F. A. Davis Co., Philadelphia, Pa.

PRACTICAL MASSAGE AND CORRECTIVE EXERCISES. WITH APPLIED ANATOMY. By HARTVIG NISSEN. Fourth Revised Edition. 68 Original Illustrations. Several Full-Page Halftone Plates. Price \$2.00. F. A. Davis Co., Philadelphia, Pa.

REFRACTION AND MOTILITY OF THE EYE. WITH CHAPTERS ON COLOR BLINDNESS AND THE FIELD OF VISION. DESIGNED FOR STUDENTS AND PRACTITIONERS. By ELLICE M. ALGER, M.D., F.A.C.S., 125 Illustrations. Second Revised Edition. Price \$2.50. F. A. Davis Co., Philadelphia, Pa.

HIGH FREQUENCY APPARATUS. DESIGN, CONSTRUCTION AND PRACTICAL APPLICATION. By THOMAS STANLEY CURTIS. Second Edition, Revised and Enlarged. Price \$3.00. Norman W. Henley Publishing Co., New York City.

LIFE, A STUDY OF THE MEANS OF RESTORING VITAL ENERGY AND PROLONGING LIFE. By DR. SERGE VORONOFF. Director Experimental Surgery Laboratory of Physiology, College de France. Translated by EVELYN BOSTWICK VORONOFF, Assistant Laboratory College de France. Price \$3.50. By E. P. Dutton & Company, New York.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.B., Professor Physiology University of Toronto. Assisted by ROY G. PEARCE, A. C. REDFIELD, N. B. TAYLOR, and others. Third Edition. 243 Illustrations, 9 Plates in Colors. Price \$10.00. C. V. Mosby Company, St. Louis, Mo.

THE MEDICAL CLINICS OF NORTH AMERICA. Published Bi-Monthly by W. B. Saunders Company, Philadelphia and London. Price per year \$12.00. Vol. 3, No. 5, March, 1920. (Philadelphia Number). Vol. 3, No. 6, May, 1920. (Chicago Number). Vol. 4, No. 1, July, 1920. (New York Number).

"DIABETES," A HANDBOOK FOR PHYSICIANS AND THEIR PATIENTS. By PHILIP HOROWITZ, M.D. 27 Text Illustrations, Two Colored Plates. Price, \$2.00. Paul B. Hoeber, New York.

AN INTRODUCTION TO BACTERIOLOGY FOR NURSES. By HARRY W. CAREY, A.B., M.D., Second Revised Edition. Price, \$1.25. F. A. Davis Co., Philadelphia, Pa.

AN EPITOME OF HYDROTHERAPY FOR PHYSICIANS, ARCHITECTS AND NURSES. By SIMON BARUCH, M.D., LL.D. 12mo of 205 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1920. Cloth, \$2.00.

MATERNITAS. A BOOK CONCERNING THE CARE OF THE PROSPECTIVE MOTHER AND HER CHILD. By CHARLES E. PADDOCK, M.D. Price, \$1.75. Cloyd J. Dead & Co., Chicago, Ill.

THE SURGICAL CLINICS OF CHICAGO. Published Bi-Monthly by W. B. Saunders Company, Philadelphia and London. Price per year, \$12.00. Vol. 4, No. 2, April, 1920. Vol. 4, No. 3, June, 1920. Vol. 4, No. 4, August, 1920.

PATHOGENIC MICRO-ORGANISMS; A TEXT-BOOK OF MICROBIOLOGY FOR PHYSICIANS AND STUDENTS OF MEDICINE. By WARD J. MACNEAL, Ph.D., M.D. Second edition, revised and enlarged. 12mo. of 488 pages. 221 illustrations. Philadelphia. P. Blakiston's Son & Co., 1920.

STATE OF NEW YORK. THIRTY-FIRST ANNUAL REPORT OF THE STATE HOSPITAL COMMISSION, July 1, 1918, to June 30, 1919. Octavo of 442 pages. Albany. J. B. Lyon Company, Printers, 1920.

THE STORY OF THE AMERICAN RED CROSS IN ITALY. By CHARLES M. BAKEWELL. Illustrated. Price, \$2.00. Published by the MacMillan Company, New York.

Book Reviews

RADIOGRAPHY IN THE EXAMINATION OF THE LIVER, GALL-BLADDER AND BILE DUCTS. By ROBERT KNOX, M.D., Hon. Radiographer, Kings College Hospital, London, Eng. A series of articles reprinted from Archives of Radiology and Electrotherapy, 1919. Sixty-four illustrations. St. Louis, C. V. Mosby, 1920. Price, \$2.50.

Under the above caption we have presented to us in book form a series of articles which were contributed to the "Archives of Radiology and Electrotherapy" during the latter part of 1919.

The principal topic is the diagnosis of gall-stones. Brief anatomical descriptions of the liver, gall-bladder and bile ducts are given.

The chemical composition of the gall-stone is mentioned and upon the calcium content often depends the amount of shadow cast upon the Roentgen plate. Numerous experiments have been conducted by having Roentgenograms made of calculi after removal and by using tubes of much or little penetration. From renal calculi, calcified mesenteric glands and calcific deposits in a tuberculous kidney the differentiation is made.

The author rightly states that "experience in examining plates and the use of suitable illumination will add greatly to the percentage of accurate diagnoses." Certainly "experience and illumination" count for a great deal and likewise so does the technique employed. Dr. Knox is frank to admit that the case should be "considered from all points of view and that the radiologist should have a sound working knowledge of clinical medicine."

The articles are of interest chiefly to the Roentgenologist. The type is clear and the illustrations are fairly good. Case records showing operative findings in order to confirm the Roentgen evidence and also, at least, an appropriate percentage of the author's correct diagnoses would have enlightened us further.

LEROY P. VAN WINKLE.

LA GYNÉCOLOGIE. Par F. JAYLE, Chef de Travaux Cliniques de Gynécologie de la Faculté à L'Hôpital Broca. Tome I. L'Anatomie Morphologique de la Femme. Illustré de 530 Dessins en 308 Figures par Henri Bellery-Desfontaines, Henri Rapin et Gabriel Reigner. En Vente à Paris à la Librairie Médicale. Masson & Cie, et la Librairie D'Art René Hellen, 120 and 125 Bd. Saint-Germain.

This very ornate volume, printed in two colors, is devoted exclusively to the morphological anatomy of the woman. No one but a European could take the infinite pains which it must have required to produce such a vast amount of material on a limited subject.

The author takes up the various types of figure in the female of the diverse races of the earth, giving measurements of all kinds to illustrate the characteristics found in different races and different individuals.

The external organs of the sexual system are minutely described and demonstrated by a great number of illustrations which were made by three artists of Paris.

The binding, which is of cloth, is of unusually good quality for a French work, and the general make-up of the book is distinctive and artistic, and the only unfavorable criticism which might be made against it is that it seems that the importance of the subject hardly justifies the elaborateness and length of the treatise.

W. H. DONNELLY.

INFECTIOUS DISEASES—A PRACTICAL TEXTBOOK. By CLAUDE BUCHANAN KER, M.D., Ed., F. R. C. P., Ed. Second Edition. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York, 1920. Price, \$17.00.

This book is based upon the experience of Dr. Ker, who is the medical superintendent of the City Hospital of Edinburgh and as such has a wonderful opportunity of observing and treating all the varieties of contagious and infectious diseases which occur in a large city. The diseases discussed are measles, rubella, scarlet fever, small-pox, vaccinia, chicken-pox, typhus fever, enteric fever, diphtheria, erysipelas, whooping-cough, mumps, cerebro-spinal meningitis. He does not recognize the clinical entity of Duke's disease. He treats these conditions from the view point of epidemiology, etiology, pathology, symptomatology, diagnosis, prophylaxis, prognosis and treatment. Acute poliomyelitis is not included in his list of subjects. The reviewer feels that this should have been dealt with, as it is a notifi-

able disease in America and one which is treated in municipal hospitals almost exclusively. The book is written in a very readable and pleasant style, printed on good paper and well bound. It is up-to-date and describes what has been accepted without going into a mass of theorizing. Dr. Ker amply acknowledges the splendid work performed by Americans such as Park, Zingher, C. V. Chapin, Gorgas and F. P. Gay in the infectious field. The book is probably one of the most reliable and authoritative on infectious diseases in the English language.

M. B. GORDON.

HEALTHY LIVING, BOOK ONE. How Children Can Grow Strong for Their Country's Service. BOOK TWO. Principles of Personal and Community Hygiene. By CHARLES-EDWARD AMORY WINSLOW, D.P.H. With Chapters on Physical Education and Sport and Health by WALTER CAMP. Published by Charles E. Merrill Company, New York and Chicago. 1920.

This is a work in two small compact volumes intended for the instruction of school children in hygiene, both personal and community.

The text is so written and arranged that it provides interesting reading, and the child might almost forget that he is reading a school book as he follows the fascinating style of the author.

The language is remarkably simple and at the same time perfectly compatible with a scientific presentation of the subject.

The arrangement of the reading matter, the system of paragraphing and the illustrations are all to be warmly praised. A special feature of each volume is the inclusion therein of an article by Walter Camp. This well-known authority writes in the first volume on "Physical Exercises" and in the second on "Sport and Health."

As a contribution to the literature and educational efforts of the present day in the all-important endeavor to raise up a generation of healthier and more intelligent citizens, Dr. Winslow's work is to be received with appreciation and gratitude.

W. H. DONNELLY.

INTERNATIONAL CLINICS, A QUARTERLY OF ILLUSTRATED CLINICAL LECTURES AND ESPECIALLY PREPARED ORIGINAL ARTICLES OF MEDICINE, SURGERY, NEUROLOGY. Vol. II. Thirtieth Series, 1920. Philadelphia and London, J. B. Lippincott Company.

The editors of the "International Clinics" which have been so deservedly popular for the past thirty years, are to be congratulated for having devoted a section in the current number to industrial medicine and surgery.

Drs. Magnuson and Coulter present fourteen well-chosen cases, each one of which illustrates a phase of industrial practice. They accentuate the fact that industrial surgery is a specialty, including as it does, clinical physiology and diagnosis, some types of general, orthopedic, and reconstructural surgery, and a practical knowledge of electro- and mechanico-therapy. The section is of interest and value to the physician practising general surgery and medicine by whom the accidents and diseases met in industry are also seen daily. The authors, who are both distinguished examples of the modern type of industrial doctor, call attention to the divergence in many instances between textbook teachings and the working out of these teachings in actual practice. The functional results of the industrial surgeon must be able to bear impartial review by the State authorities and this fact tends to maintain a high standard of medical efficiency.

The authors do not explain in detail their method of evaluating permanent disability and as a result occasionally appear somewhat arbitrary in assigning percentages. In spite of this omission, the section merits the close attention of all physicians who are ever called upon to treat industrial cases.

RUSSELL F. MADDERN.

AN EPITOME OF HYDROTHERAPY FOR PHYSICIANS, ARCHITECTS AND NURSES. By SIMON BARUCH, M.D., LL.D., 12mo of 205 pages. Illustrated. Philadelphia and London, W. B. Saunders Company, 1920. Cloth, \$2.00.

A pathetic interest attaches to this valuable little book, since it is "the last message of the author to his colleagues."

Dr. Baruch once more registers a protest against the "false teaching" of some of the older textbooks on hydrotherapy, teaching that still seeps down into our present-day practice. But thanks to him, more than any other man in this country, the singular neglect of this branch of medicine that for so long left it in the hands of charlatans has all but passed. Dr. Baruch has done an inestimable service in establishing hydrotherapy as a rational aid to the *Vis Medicatrix Naturæ* and has led his American colleagues to a scientific basis for the remedial uses of water in disease.

This epitome of 199 pages offers brief expositions, by a master of his art, of all the established hydrotherapeutic measures.

The novel whirlpool douche adapted by Dr. Fortescue Fox, of London, from the water current baths practised in the French Army Hospitals in the treatment of ankylosed and edematous limbs of wounded soldiers is fully described and endorsed, and is another proof of the remarkable flexibility of water as a therapeutic agent.

Dr. Baruch still holds firmly to his belief in the great importance of the saline elements in the Nauheim bath in cardiac cases. "That the strongest CO₂ supersaturation offers the best results is absolutely disproved by the fact that while Homburg, Kissingen, and other springs offer from 15 to 25 per cent more CO₂ supersaturation, Nauheim has for forty years been the resort par excellence for heart cases." It does not seem to the reviewer that the mere fact of popularity proves much scientifically. The efficacy of the unsophisticated waters of our own Saratoga in cardiac cases cannot be surpassed, in the reviewer's opinion, by saline additions.

The assimilation of the contents of this epitome from the pen of Dr. Baruch should add immensely to the therapeutic resources of the physician. For the practical and busy man it should supersede the bulky treatises, presenting adequately, as it does, all the essentials of the art of hydrotherapy.

Where necessary the text is supplemented by suitable illustrations and there is a sufficiently complete index.

To nurses and architects this epitome will prove as useful as to practitioners. A. C. J.

THE OXFORD MEDICINE. By Various Authors. Edited by HENRY A. CHRISTIAN, A.M., M.D., and SIR JAMES MACKENZIE, M.D., F.R.C.P., LL.D., F.R.S. Five Volumes, Illustrated. Volume I, *The Fundamental Sciences and General Topics.* Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York. 1920.

As several of the fasciculi—the first four, to be accurate—that go to make up the first volume of this system of medicine have been reviewed already in this department, it only remains to comment upon the impression made by the first completed volume. As should be expected of the men who are conducting this new system of medicine, the first volume is a scholarly presentation of the subjects dealt with. In fact, to one who was graduated twenty-five years ago, such an article as that of Henderson on Acidosis demands much side reading to be comprehensible. Chemical terminology has changed so completely and the ionic concept has so replaced the older atomic idea that, unless one has kept step with the technical literature of chemistry, he finds himself stumbling in an unfamiliar country with only here and there a partly remembered landmark. This should not be interpreted as a reflection

on the value of the work but as an index of the thoroughness and comprehensiveness that characterize it. One also finds it hard not to experiment needlessly with the ingenious mechanism of its binding.

H. G. WEBSTER.

THE DUODENAL TUBE AND ITS POSSIBILITIES. By MAX EINHORN, M.D. Octavo of 122 pages with 51 illustrations. Philadelphia and London, W. B. Saunders Company, 1920. Cloth, \$2.50.

This volume is without doubt, a complete compilation of the subject matter up to date.

The author, pioneer in gastroenterology in this country, has accomplished the utmost in internal instrumentation of the gastrointestinal tract, for both diagnosis and treatment. All workers, however, do not agree with him as to the extreme values of all of the procedures.

It might seem that some of the methods advocated, are now unnecessary, in view of the present achievements of radiography and fluoroscopy.

There is diversity of opinion as to the value of the string test, and doubt as to its infallibility seems to be well grounded.

As to the management of ulcer by means of the tube it is perhaps suitable in selected cases.

Chapters II and III, "The Duodenal Contents," and "The Diagnostic Import of the Duodenal Tube," are essentially of the most value of any in the book.

To sum up: This work deserves a place upon the library shelf of all doing either general practice, internal medicine, or gastroenterology. H. W. L.

EXOPHTHALMIC GOITRE AND ITS NONSURGICAL TREATMENT. By ISRAEL BRAM, M.D., Instructor in Clinical Medicine, Jefferson Medical College, Philadelphia, Pa. C. V. Mosby Co., St. Louis, Mo. 1920. Price, \$5.50.

This book constitutes a résumé of what has been written on the subject of Exophthalmic Goitre and its nonsurgical treatment. The easy style and simplicity of language commend the publication to the general practitioner who is interested in the study of the thyroid gland—the keystone of the endocrine arch. The anatomy and physiology of the thyroid, together with the pathology, pathogenesis, symptomatology, diagnosis, differential diagnosis, diagnostic tests, course, prognosis, and nonsurgical treatment are discussed. The therapy, as gleaned from the literature and the author's practice, presents nothing new or startling. The great value of the book lies in the thorough explanation of the minute details and rationale of the treatment as advocated, and in the message that a closer attention to the details of treatment may lead to a cure of this hitherto dreadful disease. M. A. R.

Deaths

JOHN ELIOT GRAHAM, M.D., Little Falls, died September 25, 1920.

WALTER G. HUDSON, M.D., New York City, died October 30, 1920.

CHRISTIAN OSWALD JOERG, M.D., Brooklyn, died November 4, 1920.

SAMUEL J. MELTZER, M.D., New York City, died November 7, 1920.

JAMES A. O'REILLY, M.D., Middletown, died October 13, 1920.

MAURICE L. RADIN, M.D., New York City, died October 28, 1920.

ANNA F. ROWE, M.D., New York City, died September 18, 1920.

ABRAHAM SKVERSKY, M.D., New York City, died October 27, 1920.

FRANK W. SPAULDING, M.D., Clifton Springs, died October 7, 1920.

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DIAGNOSIS IN STERILITY.*

By EDWARD REYNOLDS, M.D.,

and

DONALD MACOMBER, M.D.,

BOSTON, MASS.

THE study and treatment of sterility is greatly obscured by two obsessions which are not only so widespread among the public, but unfortunately so generally believed by the profession, as to demand notice at the very beginning of any discussion of the subject. These are: that sterility is rarely or never the fault, or misfortune, of the male, and, second, that when it is attributable to the male it is practically always the result of venereal disease or of sexual excesses or other misbehaviour. These two very general beliefs may well be termed obsessions, since they are apparently held with the greatest firmness and yet seem to be at entire variance with the facts as seen in practical work.

Although the genito-urinary portion of the profession has written many papers on the frequency of male sterility disbelief in its likelihood is a pretty constant feature in practice. Perhaps the unreadiness of the profession to listen to the genito-urinary surgeons is due to a belief that their specialty has led them to take a prejudiced view, but it is perhaps fair for us to reiterate this point, since we have long been and are still gynecologists, obtained our interest in sterility in the course of gynecological practice and were driven with reluctance and by the force of experience into consideration of the male side, yet we are today convinced as the result of a not inconsiderable experience that sterility is about equally frequent in the two sexes.

Further, we must learn to consider fertility and sterility as relative terms. We are too apt

to consider that an individual is necessarily either fertile or sterile and that there is no middle ground. In point of fact, we find in both sexes every degree and gradation in fertility, ranging from high fertility through moderate and low fertility to probable, or flat, sterility. These degrees of fertility are more definitely demonstrable in the male than in the female, but are probably equally present in both. It has happened to us many times to see splendid specimens of young American manhood, with youth, health and blameless past, in appearance types of what a man should be, who are yet partially or sometimes wholly sterile. In some such cases the sterility is merely temporary, in others it is permanent as the result of congenital, conpubertal or accidental causes, and without apparent influence on the general health. Male sterility is as important and probably as frequent as that of the female.

Again, male sterility must not be considered merely the result of past venery. In fact, the influence of the venereal diseases seems to be greatly exaggerated in the general professional mind. There is no question but that they do produce infertilities. Syphilis is often (not always) a sufficient cause of sterility, double gonorrhœal epididymitis frequently produces complete sterility, and uncured chronic pathologic conditions in the deep urethra, or vesicles and prostate, whether of gonorrhœal or other origin, frequently lower or annul fertility; but thoroughly treated, or otherwise cured, gonorrhœas seldom affect fertility. A very considerable fraction of all the fathers in the community have had gonorrhœa.

The too prevalent belief that most mild salpingites in married women are the result of old premarital gonorrhœas on their husband's part is also, we think, a wild exaggeration. Such conditions are, we think, rare.

This view became prevalent in the early days of bacteriology and when the existence of the

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

gonococcus was first known. Its advocates were soon forced to acknowledge that it could not be proved bacteriologically, but they stuck to their point under various excuses, and the statement, unfounded as it seems to be, has received general credence. The clinical experience of every gynecologist will show him so many instances of such salpingitis in women whose husbands deny any history of gonorrhœa, that we must either believe them to be of some other origin or believe that all these men are lying. Since the exclusion of falsehood on this point is manifestly impossible, the counter statement that most post-marital mild salpingites are of other than gonorrhœal origin is also too little capable of direct scientific proof and must rest largely on the inherent probabilities of the case, but I think that most physicians who sit down and give it unprejudiced consideration will find themselves converts.

Let us look at the counter argument. Coitus is not ordinarily conducted under aseptic precautions. The perineum and introitus vaginæ are surgically far from cleanly regions, and in point of fact the vagina is subjected to inoculation and re-inoculation at every intromission. It is habitually the abode of a great variety of bacteria and if nature had not provided an automatic protection against the consequent infection of the uterus and tubes, the fertility of the race would have ceased long ago. The mechanism by which protection is afforded is twofold—first, a constant, though gentle, outflow of secretion from the cervix, against which bacteria are not likely to advance, and which is reinforced by an active and profuse post-coital flow, which is an almost constant phenomenon, and which washes out the cervix at the time of greatest danger; second, the sudden change of reaction from the acid vagina to the alkaline cervix. Few bacteria can withstand such a change of reaction even when virulent, and it has long been demonstrated bacteriologically that the vaginal secretion rapidly lowers, probably by bio-chemical action, the pathogenicity of bacteria which have been introduced within it.

This mechanism habitually prevents infection of the uterus, but among the multiplicity of incidental inoculations of the vagina which occur in the community in every twenty-four hours there must inevitably be some which overcome the protective mechanism and cause ascending infections. The theorem that a large proportion of the milder inflammatory diseases of the pelvic organs of women is due to accidental infection during coitus seems to have inherent probability, and seems also to be supported by clinical evidence so soon as one's records are subjected to unbiased scrutiny and with a readiness to accept either theorem. The

rarity of such infections in virgins should be noted in this connection. A certain amount of bacteriological proof could be adduced did time permit. It is certainly safe to conclude that we should observe much caution in considering the less acute inflammatory affections of the female genitals to be of specific origin unless there is evidence of the continued existence of the corresponding infection in the organs of the male.

We must drop these two obsessions and consider every case as demanding the study of a "mating" to which a full degree of fertility in both partners is equally important, and sterility must, moreover, be regarded as a problem by itself, in the fact that it is usually quite distinct from the question of the health of the couple, except insofar as depressed health frequently causes temporary lowering or disappearance of fertility. It is the result of the disturbance of a very delicate balance and is often affected by local changes which are too slight to produce any marked effect on the health of the individual. It is often also very complex since it is not infrequently the result of several such slight disturbances situated in different parts of the organs of either one (or both) partners, any one of which may be by itself efficient.

Many sterilities are the result of causes detectable only by microscopic or bacteriologic examination, and the diagnosis of the cause of sterility in any given mating demands equally thorough and detailed microscopic and gross examination of each partner to that mating. When empiric treatment is applied without a previous diagnosis and location of the cause of the sterility it is too closely similar to the process of firing a rifle into a wood lot in the hope of hitting a squirrel, to be productive of any large percentage of success, yet empiric treatment is too nearly the rule in practice today, and every one knows that the results are far from satisfactory.

They will never be much improved until treatment is always preceded by a detailed examination of both the man and the woman. This should be both general and local. It should begin with a careful history and general physical examination of each.

The history should cover the venereal diseases and also the other general infections, with especial reference to testicular or other local symptoms in the male, or abdominal symptoms in the female, during the progress of any infection. The occasional testicular and the probable ovarian complications of mumps have long been recognized; it is less generally known that they occasionally occur in typhoid, and although it is by no means proved there seems to be some reason to believe that severe

diphtheria, scarlatina and perhaps some other infections are occasionally followed by atrophy of the testicles (or ovaries?). This point is still *sub judice*, but should be borne in mind.

The histories should also include inquiry into the marital habits, since innocent irregularities in this function are very frequent causes of sterility. Both the histories and the general physical examination should be especially directed towards finding sources for chronic auto-intoxication. There is a great deal of clinical proof that such lesions frequently lessen or annul fertility during their persistence.

The subject of possible relative degrees of fertility or infertility between certain men and women in accordance with their blood classification is still *sub judice*, and in spite of what seems to be a clinical improbability that it is of any great importance it is one on which we are now accumulating data for subsequent report.

The general examinations should be followed by careful local examination of both patients, and the importance of any anatomical abnormality or lesion which may be detected should be weighed in connection with the subsequent microscopical studies. This is especially important in women, since in them particularly there are many gross abnormalities, some of which even produce active symptoms which have little or no bearing on fertility. Neglect of this fact often leads to the performance of unnecessary, useless and too often injurious operations, and this is unfortunately a very frequent fault in the treatment of sterility today.

(Clinical Records, 4611.) A young woman in excellent health was referred to a well known surgeon for sterility alone one year after her marriage. Vaginal examination showed the uterus to be in retroversion and an operation was recommended for the correction of this anatomical peculiarity. The uterus was dilated and curetted and some one of the round ligament suspensions was performed. Two years later she consulted us again for sterility alone. On examination the uterus was in retroversion, the anterior cervical attachments were extremely short and the cervix firmly fixed close behind the pubes. The uterosacrals were in spasm, the ovaries were both enlarged. The vaginal secretion was bacillary and hyper-acid. The cervical secretion was profuse, highly tenacious and muco-purulent. On a post-coital examination the vagina was found to contain a few spermatozoa, all still. There were no spermatozoa in the cervical secretion, which was evidently quite impenetrable. The husband had been a persistent athlete until his increasing business led him to give up all exercise. He was in good general health, but

soft and fat. His prostate was somewhat enlarged. Examination of semen directly obtained showed but a few spermatozoa, mostly entangled in prostatic mucus, and for the most part still. He was, of course, sterile. This woman was not only operated upon for an anatomical peculiarity without any knowledge of the condition of her husband, but also without any study of the cause of her sterility or removal of the elements in her condition which were really effective and causative, yet the operator was a man who in the treatment of ill-health is deservedly eminent and respected.

The physical examination of the woman should include observation of the gross characteristics and chemical reactions of the vaginal and cervical secretions, and smears taken from both secretions should be stained and studied for demonstration of the character of the vaginal flora, of the leucocytes, exfoliated epithelium, character of the mucus, etc., in both. It should include also a special study of the condition of the ovaries. An adequate knowledge of the condition of normal or slightly altered ovaries can rarely be obtained by the ordinary bimanual examination. Except in very thin women with relaxed muscles it usually demands a special examination which may be described as recto-vagino-abdominal palpation. In this examination the forefinger is introduced into the vagina and the second finger into the rectum, while the other hand is placed upon the abdominal wall to depress and manipulate the organs and to furnish counter resistance. This examination requires gentleness and is not always easy to a beginner, but a few months' experience with it in a clinic will convince any gynecologist of the superior facility which it affords in the examination of the ovaries and will familiarize him with its use. With experience and skill in this special examination it is possible in most cases, i. e., in all but very fat and rigid women, to follow the appearance and decrease of the corpus luteum of menstruation by examination in the different phases of the menstrual month and by it the experienced fingers can detect very slight changes in the condition of the ovaries.

The interpretation of such minor alterations, which is often of the utmost importance in the diagnosis of sterility, demands, however, really exact knowledge of both the physiological and pathological variations which occur in the ovaries. An enlargement of the ovary, which would be of much significance in the third week of the menstrual cycle, might be no more than normal at the end of the first. Moderate enlargement of the ovaries by multiple retained follicles, or by persistent corpora, is an extremely frequent and efficient cause of sterility. Such ovaries seldom create symptoms of ill-

health other than perhaps dysmenorrhœa. They rarely undergo progressive enlargement and can hardly be regarded as pathological. They are commonly regarded as normal ovaries and are very generally left undisturbed even after inspection during operation. They are, in fact, in a state of perverted physiology in which ovulation is inhibited by undue intra-ovarian tension with usually thickening of the so-called capsule. The relief of this tension by conservative operation is the most essential portion of an operation in such cases.

The same examination greatly aids in the detection of tubal disease. It is well known that distended tubes are easily detected, but there are not infrequent cases of mild nature in which the ovarian end of the tubes is closed while the uterine end remains patent and there is consequently no persistent distention. These cases are not always detectible by palpation. The microscopical character of the secretion obtained from the uterus may excite a suspicion of the existence of this condition and it is occasionally demonstrable during the post-coital examination.

In the examination of the man, the penis should be inspected for abnormalities and his testicles, prostate and vesicles should be palpated. If abnormalities are found or the past history warrants it an instrumental examination may be indicated, but this should usually be postponed until his semen has been examined.

The local physical examinations should ordinarily be followed as a matter of convenient sequence by a microscopical, post-coital examination of the secretions of the woman. When this post-coital examination was first proposed, by Dr. Max Huhner of New York, it promised to be the most important of all examinations for sterility, and, indeed, at first sight seemed as if it were to render the whole subject easy. Subsequent experience has shown that it has grave limitations, and that unless it is performed with many precautions and unless the data obtained are checked by reference to the results of other carefully conducted examinations, it leads to so many errors that it is to be questioned whether the increasing popularity which it is obtaining will not be productive of as much harm as good at the hands of those who are inexperienced in its use.

In the first place, the examination of the vaginal secretions is worthless unless it is conducted very shortly after coitus, at the longest within an hour and as much sooner as can be managed. The vaginal secretion normally kills the spermatozoa or a great proportion of them within a couple of hours and with very moderate vaginal hostility most of the motion may have ceased after little more than a single hour.

The chief point in the post-coital examination of the vaginal pool is then to observe the length of time that the spermatozoa remain in good condition in the vagina. An examination two or three hours after coitus is worthless, since it will ordinarily show them all still whether the secretion is normal or actively hostile. The examination is then seldom of value unless it can be made within an hour, and the earlier it is feasible the better. It is never conclusive on the fertility of the male except when it is highly favorable, nor on that of the female except when considered in relation to the time which has elapsed. It is affected also by the length of time that the woman has been on her feet, since the decrease of the pool by drainage decreases the proportion of the amount of seminal fluid to the amount of vaginal secretion present. The degree of retention of the pool also varies greatly with the shape of the vagina, and the estimation of the result must be modified by consideration of all these factors, and also in connection with the previously ascertained microscopical character of the secretion, with its varying bacteriological character and the varying degree of destruction of the cytoplasm of the contained epithelium in the specimen previously taken under normal conditions, and not post-coital.

After the eye becomes expert in the detection of the spermatozoa, the most convenient combination of lenses is a low objective with a high eye-piece. This gives at once a large field and a sufficient degree of magnification. The use of a condenser is highly important, since moving spermatozoa are seen clearly only under a low illumination. It is essential to observe several slides, and in doubtful cases many slides from each secretion, since both the number of spermatozoa and their quality of motion often varies widely in different portions of the same vaginal or cervical secretions.

The slide should be warm and not over warm, and the specimen should be transferred to the slide as rapidly as possible. The degree to which a very slight amount of desiccation from exposure to the air, of chilling or overheating will destroy or alter the motility of the spermatozoa is very surprising. For the duration tests, which are often essential to the determination of the degree of vitality, the preservation of the specimen in an incubator or some similar device and the use of a warm stage are necessary. Death or early alteration in the character of the motion from biochemical action is the characteristic hostility of the vaginal secretion.

The next step in the post-coital examination is the examination of the cervical secretion, which should include the examination of a specimen taken as it flows from the os (cer-

vico-vaginal specimen) and of specimens removed by syringe or forceps from the middle and upper portions of the cervical cavity (we find a small alligator forceps, such as is used through a cystoscope or laryngoscope, much the most satisfactory instrument). The number of spermatozoa seen in the cervical specimen is always very much less than in the vaginal, five or six to the ordinary low power field is not bad and fifteen to twenty is exceptionally good. The quality of their motion is here an even more important observation than in the vaginal secretion. The characteristic hostility of the cervix is mechanical, i. e., individual spermatozoa which are moving freely and rapidly through the secretion in straightforward progress will be seen to become entangled by the tail as they pass one of the linear arrangements of leucocytes, which are characteristic of the abnormal mucus and when once entangled thrash without further progress until motion ceases. The mere fact that there is motion in the cervical secretion is of little value, the specimen should always be studied thoroughly and long enough to make sure that entanglement does not occur. Biochemical hostility and death without entanglement is also seen, but is much less common.

The value of a post-coital examination of the uterine cavity is very problematical and it is of use in only a few cases. When conditions in the vagina and cervix are normal it may be indicated, and when the uterus is but little flexed and the os ample, an observer who is thoroughly skilful in the use of the syringes and sufficiently acquainted with the microscopical character of the several secretions can frequently obtain fundal specimens which are free from traumatic blood and which are probably free from spermatozoa carried up from the vagina or cervix (prolonged search shows absence of vaginal or cervical cells), but there will be many failures in obtaining undoubted and satisfactory fundal specimens. This part of the examination is hardly to be recommended as a routine procedure or to those not specially qualified to draw conclusions or to conduct the manipulations with the necessary delicacy.

In cases in which the spermatozoa are found abundant in number and in satisfactory motion in the secretions of the woman, the fertility of the male may usually be considered as established, especially in the absence of any disqualifying factors in his local or general examination.

When they are not in satisfactory motion at the post-coital examination their poor condition may be of either male or female origin. They may have been injured by the female secretions or they may have started in poor

condition, and a specimen of semen obtained directly from the man will be necessary to establish the degree of his fertility, which is often of extreme importance to the prognosis even when the female needs treatment.

The spermatozoa from a direct specimen are at first sluggish and remain so until the specimen liquefies, which, if it is kept at normal temperature, will occur within a few minutes. With the completion of this phenomenon the spermatozoa in a normal specimen are unaccountably numerous, are almost universally in progressive motion and under satisfactory laboratory conditions will retain good motion in fair though decreasing numbers for many hours or even several days.

When motion ceases too soon it is due either to imperfect laboratory conditions, to deficient vitality of the spermatozoa, or to abnormal bio-chemical conditions in the semen. When they are seen to become entangled, it is a result of the presence of abnormal mucus. Both these latter phenomena are usually the result of inflammatory conditions in the male tract, and spermatozoa which start so handicapped rarely survive more than a very short time in the secretions of the woman.

When a direct specimen is obtained it is well to check previous results by admixing portions of the direct specimen with the vaginal and cervical secretions of the female and observing again the degree and rapidity with which they disturb or destroy the vitality of the spermatozoa.

When all these examinations have been made and their results duly reported, the whole case should be passed in review. Each hostility or abnormal condition which has been found in the gross or microscopical examination should be noted down and carefully considered in its relation to the remainder of the case (including history). Then, and then only, the observer is in a position to form a prognosis and advise on treatment.

There are but very few sterilities in which only one disturbing factor is found present, and those few are almost invariably susceptible of successful treatment.

In perhaps a majority of all cases there are several hostile factors present, some or all of which can, however, usually be correlated to a common cause, which then furnishes the basic factor in the determination of treatment.

In recommending treatment in cases of sterility the ethical position of the physician should, I think, vary considerably from that to which we are accustomed in the treatment of disease, more especially if operation or prolonged or troublesome local or general treatment is indicated. In lethal diseases the practitioner may, and should, use the utmost ex-

tent of his influence to urge and insist on the necessity for active treatment; in ill health of lesser degree he may, and should, recommend, or perhaps urge, even major treatment; but in cases of sterility the conditions seem to me to be different. Side issues of ill health sometimes exist and should be given weight, but apart from these and where the question is merely sterility, the indication for treatment is necessarily based on the degree to which the couple desire progeny, in connection with the degree in which there is a probability of obtaining success. In dealing with reasonably intelligent people I can see no method which is so proper or ethically just as that in which the practitioner explains to the two people concerned the conditions which are present, the probable prognosis, fairly and judiciously expressed, the amount of annoyance, risk if any, loss of time and expense involved in the treatment, fairly and judiciously expressed, and then leaves the whole question to their decision, to be determined in accordance with the amount of sacrifice which they desire to make, to obtain such probability of success as he feels justified in leading them to expect under the conditions of the individual case. I cannot believe that it is justifiable or right for him to determine in his own mind that a given couple who sit before him ought in duty to submit to treatment because the case looks promising, or ought to deny themselves the privilege of submitting to treatment because the chance looks small. The question looks to me to be one which only the couple interested can decide.

I cannot condemn too strongly the far too common step of persuading a woman into an operation for the correction of an abnormality on the basis that it may be the cause of sterility, without having taken the trouble or acquired the skill to determine with such degree of accuracy as is at present possible whether this particular abnormality is, or is not, the cause of the sterility which exists between her and her husband.

Discussion.

DR. SAMUEL W. BANDLER, New York: I am very sorry indeed that I checked my hat and coat before I came in, for if I had brought them with me I would take my hat off as a compliment to Dr. Reynolds. Here is a scholarly, scientific gentleman in a quiet, level-headed fashion, laying before us the basic factors of sterility, with the paternal and maternal instinct in him so strong that he considers the feelings of the prospective father and the desiring-to-be mother as much as he does his diagnosis and his therapy. I wish that I possessed his endocrines and that I were able to talk to you in quite the same quiet fashion,

but when once I get started, I become rather enthusiastic, and I trust that in what I say to you, you will not believe that I am dogmatic or trying to lay down the law. I am simply telling you what we have seen and done and observed. If you believe what I say, well and good; if you have not worked along the same lines I hope you will take the time to reach a conclusion for yourselves by observing the effects of endocrine therapy in sterility.

Now the spermatozoon is such a wonderful little being that you need nothing much more than that to make you believe in the omnipotence of the Almighty. That spermatozoon is deposited in the vagina; he marches on his way and ought to go through the cervix, the uterus and into the tube. If you were to compare his size with the distance he travels, it would seem as if one of us were to walk, oh! I don't know how many miles. Just think of the inconceivable energy! And why does he go up. He goes up for the same reason that any man of energy accomplishes a purpose—because of opposition. You can spoil a child by teaching it no effort, by giving it everything it likes, but the great men of this world accomplish things in spite of opposition, and the Almighty put opposition and trials in this world to bring out the best that there is in us. Now, the spermatozoon meets a current in the uterus, and he meets a current in the tube, with the cilia working against him, and because of that he goes against that current, and that is one of the reasons why he knows where to go. I don't know if he has a cerebrum or a sense of direction or any other sense, but he travels in an upward direction to his goal. It is these cilia working downwards that prevent bacteria in the vagina, introduced with coitus, introduced without coitus, gonococci or what not—prevent bacteria from readily going up and infecting the ovary, tube and peritoneum; and if I myself have held to the theory that many unsuspected tubal conditions are to be referred to male gonorrhœa as a basis, it is not because I believe gonorrhœa is not curable, but because I believe that in many of these cases there are added bacteria, other than gonococci, which are introduced into the vagina from the prostate.

When I was a student I did not possess a very high degree of credulity. When I read in the textbooks that the outer end of the tube grasped the ovary as the graafian follicle bursts, I doubted it. When I read later on that, if the tube on one side is removed, likewise the ovary on the other side, the patient becomes pregnant, I could not believe that the tube on the one side would go away over the uterus and grasp the ovary on the other side and that in that way the ovum entered the tube.

The doctor next referred to the current within the pelvis which tends towards the tubes by

reason of the action of the tubal ciliated epithelium which then carries the ovum along, and the theory in connection with the ripening of the graafian follicle and opposed the idea of the bursting of the graafian follicle by pressure. You have a corpus luteum cyst or an ovarian cyst and it does not break. He then talked of the enzymes of the follicles and touched further upon the alleged bursting of the graafian follicle. Often follicles do not burst because they do not possess the enzymes furthered either by the ovary, or the pituitary glands, or the suprarenals, or the thyroid, or all of them. If in any ovary the corpus luteum developing as it does in pregnancy, persists, as it may after pregnancy, or if it persists after a miscarriage, then that corpus luteum may inhibit ovulation, and an error has been made in the systematic and ready use of a corpus luteum only, considering it the all-important element of the ovary, whereas the secretion of the entire ovary is essential. The secretion of the interstitial part, which is known as ovarian residue, given by hypo. or by mouth, is the antagonistic of the corpus luteum, and the corpus luteum inhibits ovulation, although it does bring about nidation because of its action on the menstrual decidua and on the other glands. It is not the corpus luteum which should be regularly given in sterility, but it is the whole ovary, plus the interstitial part, plus the glands of the body which we feel have to do with the trophic process in the genitalia.

Even if Dr. Reynolds did not say another word in addition to what he has said in the matter of sterility in the male in the absence of gonorrhœa, the normal endocrine action which the ovary exerts on the tubal cilia, and in his statement that spermatozoa are responsible for their normality, or dependent for their normality on the endocrines of the individual, he has said something which is of tremendous and huge importance to us.

It is a wonderful thing to be able to say to a male, Your spermatozoa are not good, they are not active, you have not enough of them, but it is not your personal fault; your endocrines are at fault. In such cases I treat the patients practically along similar lines to those followed in the treatment of women. If it works in the case of the male, well and good. If not, it might be of an advantage to send your patient to the Adirondacks for a period of three or four months and let him lead an active rugged, out-door life in the hope of improving endocrine conditions. Dr. Reynolds has stated that there are instances on record where males who have been accustomed to leading an active, out-of-doors life became infertile on taking up a sedentary life, and when they give up this sedentary life and return to the out-of-doors life

to which they had been formerly accustomed, their fertility is restored.

So the question of sterility as I observe it now, is to be studied also from the standpoint of the endocrines, not because I underestimate one whit what the doctor told you, not because I underestimate one whit the value of what has been said as to mechanical factors obstructing the upward movement of the spermatozoa. I don't underestimate these points at all. We all consider those points, and Dr. Reynolds deserves the greatest credit for what he has said. I have simply paid the greater part of my attention to the endocrine question, and an all-important question (barring those cases in which there are adhesions, or salpingitis, or tumors, or endocervicitis, or anything of that character which you can treat as best you can as you go along) is this: Has the male partner good spermatozoa? These are the only cases of which we are speaking.

Then comes the question of one-child sterility and the woman who has never been pregnant the second time. When a woman who has had one child, or one miscarriage, does not conceive again, there are two possibilities: If she has had an instrumental delivery, or vaginal or uterine interference, there is always the possibility of an upward infection, and even with a normal confinement that possibility holds good with the gonococci in mind.

The question of miscarriage I desire to lay great emphasis on as being an important factor. In my treatment of these cases, I do not routinely use the curette in cases of miscarriage or abortion at the time they first take place. In the periods at which I have observed most of the occurrences of this sort, I have handled most of them without curettage and without intrauterine manipulation and they become pregnant afterwards. If, as a result of such therapy, the uterus is not emptied and the patient subsequently has a menorrhagia, and we believe there are retained products in the uterus, we can curette the now firm uterus, four, five, or six weeks after the miscarriage, instead of doing it in routine order at the time of its occurrence.

When a woman is two or three months pregnant there is in the ovary a corpus luteum, which grows ordinarily as far along as three, four or five months. It is stimulated by placenta and advances for the first two or three months of pregnancy, at the end of which time it begins to gradually disappear, but if a patient miscarries at two, three or four months, we don't know whether the corpus luteum is going to regress and disappear out of the ovary or not, and if it does not and it exists there permanently, unless we remove it, it may inhibit ovula-

tion in the ovary in which it is located and also in the other ovary.

That is one explanation. When you curette for sterility in a woman who has never been pregnant and remove an apparently normal endometrium, you may be hurting one or both ovaries of that patient because there is often an extremely intimate relationship between the ovary and the endometrium. Curetting for sterility cannot be looked upon as without possible harm to the ovary, or ovaries, of many patients.

DR. CHARLES GARDNER CHILD, JR., New York: I wish to thoroughly concur with what Dr. Reynolds says in regard to the responsibility of the male in these cases of sterility, and I agree absolutely with his assertion that it is about a 50-50 proposition. I am sorry to say, even today, the female is frequently subjected to minor and even major surgical procedures aimed at the cure of a condition for which she is not in the least responsible.

Only a short time ago a glaring example of this came to my attention in a couple sent from the Middle West, both under 30, both as magnificent specimens of physical health as one could find. They had been married seven years without any offspring. They were sent to me with a clean bill of health in every respect, with the statement that the husband was fertile, but that the woman needed some surgical operation or other for the cure of sterility, which I was supposed to perform. I said to the husband, 'Your fertility has been decided.' 'Oh, yes,' he said, 'I'm all right. My spermatozoa are very active: I saw them myself.' I said, 'Yes.' 'Under the microscope,' he said, 'the doctor showed me the spermatozoa.' I said to him, 'What did they look like?' and he replied, 'They floated rapidly across the field.' Of course, spermatozoa do not float rapidly across any microscopic field. My suspicions were aroused. I examined the woman one hour after intercourse and was unable to discover any spermatozoa in the vaginal tract whatsoever. I then questioned the male and found out that some years before marriage he had had one testicle removed and that the other testicle had never descended into the scrotum. The chances of the woman becoming pregnant were nil.

Dr. Reynolds' citation of cases was very instructive and most interesting. I feel that the only objection I can make to his paper is that he lays rather too much stress upon diseased ovaries, or ovarian conditions, as responsible for sterility and not enough on tubal conditions.

DR. L. L. GANNETT, Adams: I just at this time want to say that I am not a specialist. I have had no unlimited experience, and I have no silver tongue, but if I had, the compliment I would pay

our previous speakers would be that I consider these debates from the point of womankind as much more important than the action of the Legislature of Delaware.

I cannot believe that anything which will be done in New York this week will be as important to the health and the happiness of the woman as just this discussion. I have had the pleasure of listening to Dr. Bandler before, and his teaching has all been in accordance with conservative, sensible and reasonable consideration of both parties.

I have had a little experience, however, and that little experience has been on the line of health for both parties, being much more important than immediate surgery.

DR. EDWARD REYNOLDS, Boston: I was much interested in what Dr. Bandler said. I did not intend to enter into therapeutics. The subject is too large to cover more than one aspect of it, and I meant to limit myself to diagnosis.

I think that, perhaps, as both Dr. Bandler and Dr. Child said, I laid too little emphasis on the infections of the tubes and ovaries in my paper. I do not do so mentally or habitually. The infections of the tubes are all important, and, I think, unfortunately, always of poor prognosis. The infections of the ovaries are all important, and if I were asked in which class of sterilities I had had the greatest success I think I would say it was in the class in which the ovaries, though not seriously diseased, were non-ovulating, and in which either minor or operative therapeutics has restored them to ovulation. Of the operative cases I consider those in which there were persistent corpora by all odds the most successful. I have followed for years in several cases the continued existence of a persistent cystoma corpus. In many cases I have watched the ovaries and persuaded myself that one corpus lasted in efficiency until the next appeared, and in those cases success should be obtained almost invariably if there are not complicating conditions present.

I do not underestimate the importance of the endocrinological view of the situation. I believe profoundly, though I do not think it is yet susceptible of definite proof, that the alterations in the secretions which form the mechanism by which the spermatozoa are killed, or their motility annulled, in the majority of cases of sterility are almost uniformly, or rather, in a very large proportion of the most interesting sterilities, due to an altered influence from the ovaries. In some ways, we like to suppose that it is endocrinological, but altered conditions of the ovaries certainly alter the conditions of the mucous membrane of the genital tract, and through that alter the secretions which pour from them. I say certainly, because I have seen many cases in which no treatment other than operation on the ovaries restored the ovaries to function

by relieving them of all tension by evacuating all the retained products entirely; but an operative procedure of that kind is radical and entirely changes the flora of the genital tract, which means, I believe, that the alterations in the secretions which form the mechanism of sterility in most cases are the result of what we may call endocrinological action on the ovaries.

I hope that in the future endocrinological treatment is going to furnish the key to many of these cases and do away with surgery, which today, I think, is our best resource.

I do believe (and Dr. Bandler will pardon me for saying so) that today treatment by the extracts of the ductless glands (endocrinological treatment) is pretty largely experimental; that we know so little of their functions that we can judge which extract to use in a given case only by empiric selection of trying one after another. I have been forced by a good many experiences with referred cases to the belief that the general and indiscriminate use of the extracts of those organs does an enormous amount of harm. Pushing the wrong extract makes the patient worse, and you don't know which is the wrong one. Dr. Macomber and I have under treatment now and have treated a good many cases endocrinologically with the greatest caution, with the greatest care, under the closest observation of the circulatory and other functions of the patient, and sometimes with good results. In azoöspemia and oligospermia we have had, I think, better results with the anterior lobe of the pituitary than with any of the other extracts. We have had some very good results from that, but for the present I think in practical treatment we must rely on surgery and on minor treatment rather more and more readily than upon the as yet somewhat unknown endocrinological treatment, and I think we must consider what may be at bottom endocrinological treatment from another point of view. In the male oligospermias I have been struck with the frequency with which a patient who has been an athlete, especially a man who has been through hard rowing training year after year, gives it up and goes into an office, gives up exercise and has oligospermia until he goes back onto the hard exercise and hard feeding which he has made a necessity for himself.

I believe we can follow this treatment in many cases through the natural channels by attending to the general health, more efficiently, perhaps, than in any other way.

I believe and I think it is proven by the experience of the vets. in the experimental breeding station with animals that what they call good breeding condition is of the utmost importance and that the absence of good breeding condition in exercise and probably in diet frequently produces temporary infertilities.

THE DIAGNOSIS OF CHOLECYSTITIS AND THE INDICATIONS FOR CHOLECYSTECTOMY.*

By ALEXANDER E. GARROW, M.D.,

MONTREAL.

SOME time ago a young man who gave a typical clinical history of duodenal ulcer, entered the Royal Victoria Hospital. The barium meal report and the chemical examination of the test breakfast corroborated this diagnosis. No occult blood was found in the stools.

At the operation no evidence of pathological change was found on inspecting and palpating the duodenum or pyloric region; the gall bladder appeared to be normal and there were no gross pathological changes in or about the appendix.

The writer was about to close the abdomen, but thought better of it, and opened the duodenum instead. Examination of the mucosa revealed an ulcer on the anterior wall and another on the posterior (contact ulcers), each about the size of a large garden pea and extending through the mucous coat.

The clinical history and laboratory findings in this case proved to be reliable. On the other hand, the living surgical pathology could only be demonstrated, at least by the writer and those who were present at the operation, by the ocular inspection of the exposed mucous membrane because—there were no adhesions—no puckering or cicatricial contraction of the serous coat—not even hyperæmia, and on palpation no induration or depression could be felt.

A careful and extensive view of recent literature on cholecystitis, as well as my own limited experience, leads me to believe that well-defined pathological changes involving the gall-bladder, as seen at operation, are conspicuous by their absence, and yet the clinical history is characteristic of cholecystitis. It is quite true that these cases comprise but a small percentage of the whole, nevertheless, like the duodenal lesion just reported, they are of importance and demand careful attention and study.

Briefly stated, there seems to be definite evidence that the gall-bladder may be the subject of an infective process, giving the clinical history of cholecystitis, and yet show little if any pathological change that can be detected by the eye or felt by palpation.

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

Hertzler¹ says: "the surrounding peritoneal surfaces are much more apt to retain evidence of passive irritation than is the peritoneum covering the gall-bladder itself. In this respect it is entirely analogous to the conditions existing about the appendix. The cholecystoduodenocolic ligament often shows a permanent hyperæmia when the gall-bladder itself shows none. The peritoneum in the region of the colon and beyond, likewise may show an increased vascularization.

"This state of the surrounding peritoneum I believe is a more accurate criterion for the removal of the gall-bladder than is the appearance of that organ itself. Like the appendix, the wall of the gall-bladder may recover so completely that no exact evidence of disease can be pointed out, but it is still subject to recrudescence of the inflammation."

Charles H. Mayo has repeatedly drawn attention to the importance of examining the lymph glands, draining the gall-bladder and duodenum in both acute and chronic infective processes involving these organs. He says: "that with sufficient symptoms for surgical intervention if these glands are swollen without other adequate cause—as for diseased duodenum, pancreas (usually associated with inflammation of the gall-bladder or ducts), or general abdominal infection—the gall-bladder should be removed, whether or not stone is present." He is referring to thin-walled, blue gall-bladders which, when free from adhesions, formerly had been considered free from disease. In the writer's experience, thin-walled, blue gall-bladders, with a clinical history of cholecystitis, have in several instances shown a typical strawberry mucous membrane when the organ was opened.

The pathological lesions in the gall-bladder are not definite entities but are degrees in a process of reaction to irritants (Maccarty²).

According to Rolleston³, the variations in the infective process are due to the virulence and type of organism and to the resistance of the gall-bladder. He recognizes an acute form, which like appendicitis may be catarrhal, suppurative, phlegmonous, gangrenous, and a rare membranous variety usually associated with gall-stones.

Under "chronic" types he accepts Maccarty's (Strawberry gall-bladder—a chronic catarrhal cholecystitis), a chronic form with thickened walls; an atrophic sclerosing or cholecystitis obliterans; a chronic ulcerative; and a chronic empyema.

Louis and Andral, in 1829, reported cholecystitis as a complication in typhoid fever, and Gilbert and Girode, in 1890, first proved bacteriologically that the suppurative form may be due to typhoid bacilli (Rolleston³). At present all authorities are agreed that inflammations of the gall-bladder are of infective origin. Most of those present, like the writer, were taught that bile, infected by portal-borne organisms, and re-

tained for varying periods of time in the gall-bladder, set up a catarrhal process, or else bacteria found their way from the duodenum into this reservoir by the common duct.

Doerr⁴, in 1905, recovered typhoid bacilli in the bile by injecting the organisms into the systemic veins.

The surgical treatment of cholecystitis by drainage until the bile became sterile was, and still is, due to this conception of the path of infection.

Naturally recurrence of symptoms due to reinfection of the bile could be attributed to a fresh supply of bacteria from the intestinal tract.

That drainage has benefited a large majority of those cases is beyond doubt, but that it is the result of drainage *per se* is questionable. Is it not possible that rest, by relieving the tension in the gall passages by drainage, has been the important factor in the cure and not simply the withdrawal of a comparatively small amount of the total quantity of bile secreted daily by means of a cholecystotomy? Viz: 90—120 c.c. out of 500 c.c.

It has been recognized for years that both acutely as well as chronically inflamed gall-bladders might yield sterile bile at the time of operation.

Rosenow⁵, has shown that "appendicitis, ulcer of the stomach and duodenum, and cholecystitis, are largely embolic infections from some distant focus of infection, or even from the more or less normal intestinal tract by streptococci or other bacteria having elective affinity for these structures, and that the simultaneous presence of two or more of these diseases in the same individual is in the beginning due more often to this cause and not so often to infection by continuity or by way of the lymphatics.

R. O. Brown⁶, in a bacteriological and experimental study of seventy gall-bladders, which were removed, treated and examined under the strictest precautions, failed to demonstrate infected bile in a large number of these cases. Bacteriological examination of emulsions prepared from the gall-bladders and implanted on suitable media, however, gave 42 per cent positive growths in bladders showing but little pathological changes, and 75 per cent in those having well marked evidences of inflammation. Streptococci or colon bacilli, or both, were found on examination.

It is this embolic origin of cholecystitis and not the bile infected contamination of the gall-bladder, which has altered the practice of so many surgeons of wide experience, international reputation and sound judgment, in performing cholecystectomy instead of cholecystostomy, reversing the percentage of the former for the latter—even exceeding it, within the last decade.

The team work of the pathologist, bacteriol-

ogist, clinician, operator, and especially those engaged in research work, has been of inestimable value in the study of this disease and its treatment. Further experience alone will show whether cholecystectomy in the early mild cases will prevent recurrence of symptoms, and aggravation of symptoms due to reformation of stones in the bile passages, to pancreatitis, to crippling adhesions, or to extension of infection into the intrahepatic or extrahepatic bile channels.

The writer agrees with those who believe that cholecystectomy is the operation of choice for selected cases of cholecystitis—those with little pathological changes, and those limited to the gall-bladder.

Unfortunately cholecystectomy does not invariably prevent recurrence or aggravation of symptoms, due to a pre-existing or subsequently acquired cholangitis with associated cholelithiasis, for stones may be found both in the intrahepatic or extrahepatic ducts, or in both, either at a second or even third operation, or at a post mortem.

Crippling adhesions and pancreatitis not infrequently account for the continuance of abdominal distress and ill health. Pancreatitis, occurring after cholecystectomy, may be due, as Archibald⁷ has suggested, to sphincterospasm of Oddi's muscle, which guards the outlet of the common duct; under such circumstances the bile pressure rises and regurgitation into the pancreatic duct with inflammation of the gland results. To overcome this spasm Archibald has advised section of the sphincter.

Judd⁸, on the other hand, believes that the dilatation of the common, but especially of the hepatic ducts, following cholecystectomy, and quite readily seen now that our attention has been directed to it, in occlusion of the cystic duct from impacted stone or stricture, leads to a paresis or paralysis of the sphincter and thus prevents regurgitation of bile into the pancreatic duct, and allows a more or less continuous flow into the duodenum.

Should experience prove this to be true pancreatitis from this cause should not occur and both Mayo and Judd employ cholecystectomy in treating pancreatitis complicating cholecystitis.

For many years the writer was impressed by the smooth recovery following transduodenal choledochotomy. The stone, impacted in the papilla, or just above it, was freed by incising the orifice at the opposite poles of its vertical diameter. The object in view was primarily to prevent stricture and provide free drainage—the opposite treatment employed for a horse-shoe fistula-in-ano when the surgeon severs the sphincter twice but in a two-stage operation, awaiting healing of the first incision before cutting the opposite side.

There is good reason to believe that a patient

may recover completely from an attack of cholecystitis. This is unquestionably true of appendicitis. In both resolution has been perfect, due possibly to mild infection and marked resistance of the patient. When, however, the clinical history and physical signs are those of recurrent attacks, or of a chronic type of inflammation in either of these organs, it is safe to assume that both are the seat of an infective process, which from time to time becomes quiescent only to become active when the individual's resistance has been lowered from numerous predisposing causes—not the least of which is the presence of gall-stones in the gall-bladder.

The clinical history and physical signs of cholecystitis vary according to the type and the severity of the inflammatory processes, and to some extent to the presence of gall-stones.

Hepatic colic, however, is not a pathognomonic sign of cholelithiasis. It may occur in both acute and chronic cholecystitis, due possibly to thick bile—excess of mucus—and to obstruction of the cystic duct from any cause.

In acute cholecystitis the signs and symptoms are more or less those of the "acute abdomen;" in the chronic forms chiefly those of so-called "indigestion."

That gastric and duodenal symptoms predominate in inflammations of the gall-bladder and bile passages, is to be expected, since the latter are, with the liver, outgrowths from the digestive tube, and their nerve supply, from the seventh to the ninth thoracic lies just below those passing to the stomach, so that with severe stimulation the irritable focus in the cord invades the nerve supply of the stomach (Mackenzie⁹).

But the converse is also true. Nevertheless, it has been the experience of many surgeons to open the abdomen for a supposed cholecystitis only to discover a duodenal ulcer, or to open for the latter and find an inflamed gall-bladder.

A carefully obtained clinical history of the recent as well as of previous attacks and routine laboratory examinations—chemical, microscopical, X-rays, etc.—will materially obviate if not entirely prevent mistakes in diagnosis.

An attack of acute cholecystitis is ushered in with more or less severe pain, referred to the epigastrium—right subcostal region, occasionally to the left; this is followed by tenderness and more or less splinting of the muscles in the right upper quadrant, not infrequently by difficulty in breathing.

At times a tumor can be felt; this may be a Riedel's lobe of the liver, or the gall-bladder itself. When the latter is not fixed by adhesions to the parietal peritoneum it assumes a pear or sausage-shaped swelling which descends obliquely towards the mid-line on inspiration, has a smooth, round surface below, but the upper part of the tumor merges with the liver and cannot be defined. Such tumors may be mistaken for kidney

swellings, since albuminuria, blood and casts, with frequency of urination are often found in cholecystitis on routine examination. Ziemssen's test is then of value for distending the colon with air, and will still disclose the enlarged gall-bladder above the resonant colon, while a kidney enlargement has a tympanitic note in front of it.

There is at present in the hospital a patient who had a large dull mass in the upper right quadrant which did not move with respiration. Laparotomy revealed a perforation of a phlegmonous gall-bladder, surrounded by a bile-stained localized abscess which contained stones that had escaped from the bladder. Cholecystectomy was performed and the cavity drained for a few days. Her convalescence has been uneventful, indeed, very similar to that of the drainage of a localized appendical abscess.

Fever in acute cholecystitis varies with the virulence of the infection and the pathological changes affecting the gall-bladder and its surroundings. Chills are unusual—in common duct infections rather more frequent.

Routine examination of the blood should be carried out, for it will usually reveal a more or less marked leucocytosis. These evidences of systemic absorption are usually well marked in the phlegmonous and suppurative forms.

Vomiting in the acute form as a rule is not frequently repeated; if it becomes a pronounced symptom in the course of the attack it may be due to a complicating intestinal obstruction, to a local or spreading peritonitis.

The indications for treating the acute types of cholecystitis are by no means universally adopted by the leading American and European surgeons. There are those who drain phlegmonous, suppurative, gangrenous and contracted fibrosed gall-bladders, especially those bound down by dense adhesions, provided that at the time of operation bile is found, or at least escapes from the drainage tube within a day or two following cholecystostomy. So long as bile drains away they look forward to and hope for more or less resolution of the inflammatory process and finally closure of the fistula. Many of these recover very well from the operation, but others have recurrence of symptoms, stone formation and other sequelæ, due no doubt at times to reinfection of a damaged organ—but much more likely to the lighting up of latent infection in the gall-bladder.

Other surgeons, and I think they are in the majority, perform cholecystectomy for the above conditions, either at once if the patient's general condition warrants it, or else drain as a temporary measure until general improvement occurs, and then remove the gall-bladder. Many animals have no gall-bladder, and it is certainly not essential to life, though it may be of value to the well-being of the individual.

The gall-bladder receives the overflow of bile

from the hepatic ducts. Bile is secreted continuously, but is allowed to escape from the papilla along with the pancreatic juice when food enters the duodenum. The bile from the gall-bladder contains more mucus than that from the hepatic ducts. Apparently then its chief function seems to be an actively functioning reservoir capable of emptying when required, and acting as a receptacle to receive the overflow when the papillary sphincter is closed. According to Judd, when the gall-bladder is removed, the hepatic ducts compensate by dilatation, and to a less extent the common duct.

All are agreed that permanent occlusion of the cystic duct demands cholecystectomy.

There is one condition, however, which merits careful consideration, viz., jaundice, due to permanent obstruction of the common duct, and this especially to stricture, dense adhesions, new growths in the duct, or to a sclerosing process in the head of the pancreas. The retention of even a sclerosed gall-bladder, provided it communicates with the common duct, enables us to direct the bile and pancreatic secretion into the duodenum or other part of the intestinal tract, and should not be removed.

The writer is much impressed with Deaver's teaching that the removal of slightly infected gall-bladders will do much to prevent the subsequent sequelæ and complications involving the bile passages and pancreas, which, however, occasionally follow cholecystectomy for densely adherent and functionally useless sclerosed bladders.

The symptoms and signs of some forms of chronic cholecystitis are chiefly negative as far as the gall-bladder is concerned. Symptoms referred to the stomach, and it may be the duodenum, predominate. Unfortunately, too, the ocular appearance and palpable evidence of any distinct pathological change is of the slimmest character when the gall-bladder is examined.

The symptoms chiefly complained of, so far as our records show, are distressing sensations or a feeling of discomfort in the epigastrium, referred at times to the lower part of the sternum, less frequently to the right and left lower costal regions. Pain, beneath the right scapula or over the eighth, ninth and tenth ribs, behind. Flatulence, occasionally "sour stomach" and a bad taste in the morning. Loss of appetite, headache and constipation are common symptoms in the reports.

Patients are frequently well nourished, but usually pale and sallow, others are obese and short of breath on exertion. Inspection of the abdomen is often negative; no tenderness in the epigastrium, though it is more or less felt in the subcostal region on the right side, usually well marked and distinctly localized on deep pressure.

In a recent series of these cases the examina-

tion of a test breakfast gave about the normal acidity percentage of total acids, in a few it was slightly above normal.

The gastric symptoms as a rule have no definite or periodic relation to the meals, and one is struck with the frequency with which they occur late at night.

The X-ray examinations on the whole have been of value in eliminating definite organic gastro-duodenal disease.

These cases, now referred to, have their symptoms in the form of attacks lasting varying periods, which alternate with weeks or months of comparative comfort, though they are seldom free from flatulence.

In the ordinary chronic forms of cholecystitis, resulting from repeated attacks of more or less acute inflammation, the thickened gall-bladders are milky white and adherent to the surrounding tissues. Such cases are readily recognized and the symptoms are those of the previous attacks, which may date back for many years. The local signs are tenderness, sometimes rigidity, especially on deep pressure, and occasionally a tumor in those with obstructed cystic duct.

The indications for cholecystectomy in the chronic and recurring attacks are probably more imperative than for the initial acute forms of phlegmonous and suppurative cholecystitis, provided the cystic duct is not injured and rendered impervious. This is especially true of densely adherent contracted gall-bladders, usually functionless organs.

With respect to chronic forms showing slight pathological changes, but with a very definite and characteristic clinical history, the writer—though his experience is limited in this group—is inclined to perform cholecystectomy, since the weight of evidence is in favor of embolic infection. One must, however, be assured that a careful and systematic examination is made, at the operation, of all other organs likely to give rise to the symptoms complained of, before removing the gall-bladder. Needless to add, the appendix is removed in all cases whether it shows pathological changes or not, except in those cases which demand the shortest operative procedure.

Reference has already been made to the difficulties of recognizing a duodenal ulcer and some forms of cholecystitis.

The evidence of chronic pancreatitis at operation rests largely upon what the surgeon can determine by palpation, and the writer has on more than one occasion been chagrined to learn from the pathologist at a post mortem that a moderately enlarged and distinctly nodular or supposedly sclerotic pancreas was perfectly normal. However, here is another story: Four days ago I operated on a patient 37 years of age with the following history:

She had given birth to her last child two months ago, and had always enjoyed good health. One month ago, for the first time, she had a severe attack of pain in the right hypochondrium, relieved by a dose of morphia. She did not vomit and was told by her doctor that she was slightly jaundiced. She had neither chills nor fever and got perfectly well, but had similar attacks on the 14th and 15th of the present month and vomited once in each of the last two attacks. The pain in all three attacks radiated to the right shoulder. She entered the hospital on March 16th and was kept under observation for a few days.

She had no pain, but was tender and slightly stiff on palpating the subcostal region on the right side. She was not jaundiced; her urine showed no bile. Exploratory incision revealed a full, milky-white gall-bladder, without any adhesions, and no free fluid in the subhepatic space or beneath the transverse meso-colon. The peritoneum covering the first and second parts of the duodenum, as well as the upper layer of the transverse meso-colon, and about two inches of the contiguous colon, was deeply congested and the vessels dilated, but there was no evidence of lymph on the peritoneal coat.

Palpation of the gall-bladder gave the sensation of increased thickness of its walls; no stones could be detected. The cystic duct was thickened and a small, round mass suggested a gland, or bile sand, impacted therein. The pancreas was thought to be normal, a little softer possibly than usual, not at all enlarged, and was freely movable. The foramen of Winslow was patent. Otherwise all abdominal organs appeared to be normal. The hepatic and common ducts showed nothing abnormal.

On pulling down the omentum preparatory to packing in gauze to expose the subhepatic space, a small, pinhead, yellowish-white spot caught the writer's eye and suggested fat necrosis. This was the only spot found on the anterior aspect of the omentum. On turning up the latter and inspecting the under surface of the transverse meso-colon, twelve to fifteen similar spots were found close to Treitz's ligament, and half a dozen more were disclosed apparently beneath the peritoneum covering the head of the pancreas.

The gall-bladder was removed; it contained twenty-two small stones; its cystic duct contained an impacted stone and some sand. The surface was velvety and its submucous coat thickened throughout.

For study and corroboration of findings, (1) a piece of omentum was removed, also (2) a small portion of the head of the pancreas, and (3) one of the glands found along the side of the cystic duct.*

* The pathologist reported fat necrosis in the specimen removed.

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During the last two years eighty (80) operations were performed on the gall-bladder and bile-passages, with five deaths.

One died on the day she entered the hospital, with general peritonitis, operation under local anæsthesia, drainage of the subdiaphragmatic abscess, and of a ruptured gall-bladder.

One died on the twenty-third day, with myocarditis and arterial thrombosis of both legs. Operation performed was removal of stones from the gall-bladder and common duct with drainage.

One died on the third day. Patient had jaundice for three months, choledochotomy and drainage.

One died on the third day following cholecystectomy. Patient had been operated on seven years before for stones in the gall-bladder and was drained. Jejunostomy under local anæsthesia was performed to relieve a dynamic ileus.

One died on the sixth day following cholecystotomy and drainage for chronic cholecystitis with adhesions and for a similar condition involving the appendix; the latter was removed. This patient developed acute dilatation of the stomach and a similar condition of the jejunum. Gastric lavage failed to give relief and jejunostomy under local anæsthesia gave but temporary relief.

To summarize:

- One death from generalized peritonitis;
 - One from thrombo-arteritis of both legs;
 - One from cholæmia;
 - One from adynamic ileus;
 - One from acute dilatation of stomach and a similar condition involving the jejunum.
- In the 80 operations there were:
- 44 Cholecystotomies,
 - 27 Cholecystectomies,
 - 8 Choledochotomies,
 - 1 Fistula—(Cancer of gall-bladder operated on elsewhere for gall-stones—was only explored condition found inoperable.)

Of the 80 patients, 60 were women; the average age was 44½ years.

- 39 had definite colic; of these 32 had stones, 7 none.
- 45 had sour stomach and belching of gas.
- 50 had vomiting.
- 27 had jaundice.
- 9 had a palpable tumor.
- 43 had radiating pain.
- 53 had marked tenderness.
- 11 had definite rigidity.
- 40 had stones in the gall-bladder.
- 8 had stones in the common duct.
- 10 had what was regarded as definite changes in the pancreas.

Reliable follow-up records are at present not at hand, but to my personal knowledge eight of these have had recurrence of symptoms, two following cholecystectomy and six following cholecystotomy and drainage.

THE ABDUCTION TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR.*

By ROYAL WHITMAN, M.D.,

NEW YORK CITY.

TEN years ago I read a paper on this subject before the State Medical Society. At that time the abduction treatment, although described eight years before and vigorously urged on the profession in subsequent papers, was, practically speaking, a novelty. Now, I shall assume that it is fairly well known and that a brief outline of the method and of the principles that it applies as contrasted with those of conventional practice will serve as a basis for the conclusions that I shall present for consideration.

The abduction method utilizes the mechanics of the joint to correct deformity and to fix displaced fragments in apposition, consequently it is the only treatment by which surgical principles may be consistently applied.

The patient, under anæsthesia, is placed upon a pelvic support provided with a perineal bar. If the fracture is complete, the trochanter, having been lifted to the normal plane, the shortening is reduced by direct manual traction on the extended limb, which is at the same time rotated inward, thus opposing the fragments. Both limbs, extended and under manual traction, are then abducted to the full limit, on the sound side first, to demonstrate the normal range and to balance the pelvis. When this limit is approached on the injured side the tension on the capsule aligns the fragments in a horizontal plane, and finally forces the neck fragment against the inner and resistant head fragment. This mutual pressure, the first es-

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

sential of stability, is further assured by the inclusion of the line of fracture within the acetabulum by the apposition of the trochanter and the side of the pelvis, and by the muscular impotence incidental to complete abduction. (Fig. 1.) A long plaster spica is then applied, which by fixing the limb in complete abduction, extension and slight inward rotation, insures the continued effectiveness of the anatomical splinting. (Fig. 2.)



FIG. 1.—Illustrates the application of the abduction method for intra-capsular fracture of the left hip in an elderly subject. The shortening and outward rotation having been reduced the limbs under manual traction are abducted to the normal limit.

If the fracture is incomplete or impacted, the neck, in its relation to the shaft, is usually displaced backward and downward, and whenever the deformity is sufficient to seriously impair the normal range of motion it should be cor-



FIG. 2.—The same patient. An X-Ray print taken through plaster spica shows the apposition and security of the fragment.

rected. In most instances, by the manipulation described, the shortening of the so-called impaction may be as easily reduced as if the separation were manifestly complete. If, however, the resistance is greater, as in the incomplete fractures of childhood or when treatment has been delayed, manual traction is supplemented by downward pressure on the projecting trochanter and more effectively by natural leverage. For since the range of normal abduction is dependent upon the upward inclination of the neck of the femur, its depression must limit abduction by contact with the upper border of the acetabulum. This contact fixes the neck and by the leverage of the extended limb against this fulcrum, the limb may be abducted and rotated inward to the required degree. In other words, the displaced neck is in a relation to the acetabulum, which under normal conditions would require abduction and inward rotation of the shaft. To correct the deformity, therefore, one must adjust the shaft to the neck by inward rotation and abduction of the limb. The plaster spica is then applied, assuring immediate fixation. Correction of deformity in this manner, far from jeopardizing repair, is the most effective means of promoting it, since restoration of the normal contour apposes the fractured surfaces which were separated by the distortion.

The subsequent treatment is the same for all forms of fracture. The head of the bed is raised one or two feet, an inclination which, as contrasted with that required for traction, is far more comfortable, and because of its influence on the blood supply more favorable to repair. The patient may be turned from side to side or completely over to the ventral position, without discomfort or danger of displacement, thus bed sores and hypostatic congestion may be prevented. (Fig. 3.) If feasible, patients may be transported daily to the open air and fixation in the abducted attitude even permits locomotion without injury, as has often been demonstrated by young and unruly subjects. The spica is retained for from eight to twelve weeks, or until it may be assumed that union is sufficiently firm to permit movement of the limb. On its removal, the patient should remain in bed, devoting, if possible, several weeks to muscular re-education and to the restoration of motion in the disused joints, the limb being drawn out to the limit of abduction at regular intervals by the attendant. Weight bearing is not permitted until free and painless movement and X-Ray examination indicate stability of repair. Thus, what may be termed the physiological treatment of fracture of the neck of the femur of the ordinary type is rarely completed within a year, and if early locomotion is desired a protective hip brace should be provided.

It may be noted that the abduction treatment is conducted with a definite purpose, the initial attainment of which may be demonstrated by X-Ray examination at the time of the operation and at intervals thereafter, and that from beginning to end the patient is under single control. It was originally devised for the treatment of fracture of the neck of the femur

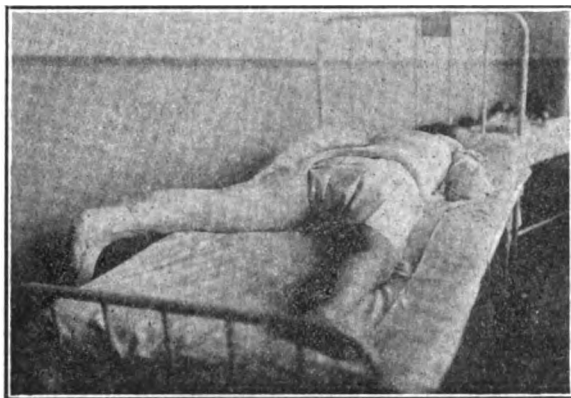


FIG. 3.—The same patient. Shows the elevation of the head of the bed and the posture that prevents bed sores and hypostatic congestion. The shirting binding the margin of the plaster and the slight flexion at the knee may be noted.

in childhood, after it had been demonstrated that these patients suffered the same penalties for inadequate treatment as older subjects, and in its evolution technical efficiency has remained the first consideration. For this reason doubtless it has often been criticised as adapted only to the young and vigorous. The contrary is the fact, since this method, which permits frequent changes of posture, has a far wider range as regards age and infirmity than those which require a persistent dorsal position. Indeed, it may be even more conservative than non-treatment, since it relieves pain and prevents bed sores. From the standpoint of practicability it has an even stronger claim. There is at present no adequate provision for these patients in hospitals, consequently the great majority must be treated at their homes. Under these conditions the advantages of the abduction treatment are decisive, since if properly applied, it requires only supervision, supplemented by the quality of nursing usually at command. Conventional treatment, on the other hand, if conducted with a pretense of surgical efficiency, requires constant and skilled attention, much of which is expended on the prevention and care of bed sores.

The apparatus required for the application of the abduction method is simple, and on occasion may be improvised. The materials for splinting are always at command. Even the qualifications of the surgeon as compared with

other operative procedures of like importance are not exacting. They are a thorough apprehension of the mechanics of the method; sufficient familiarity with anatomical landmarks to assure the correction of the deformity and the ability to apply a secure and comfortable plaster support.

With cases that may be termed inoperable a paper on the positive treatment of fracture is not directly concerned. Theoretically the class is large and has always received the first consideration in the textbooks. In my own practice it is small, because I am convinced that efficient treatment of the fracture usually lessens rather than increases the danger to life; that repair in the old, as in the young, is primarily a question of opportunity, and that the less the reparative capacity of the tissues the more essential must be favoring conditions; consequently that the result in fracture of the neck of the femur is more directly influenced by the character of the treatment than is that of any other injury of its class.

The latest statistical evidence on this point is an analysis of seventy cases treated by the abduction method (W. C. Campbell, *Annals of Surgery*, Nov., 1919), the majority of the patients being over sixty years of age. Seven of these were too recent to report. One could not be traced and there were five deaths (7 per cent). Twenty-eight of the fractures were intracapsular (central). Of these twenty-four recovered with bony union and good function (89.2 per cent). Similar results were attained in all the cases of the extracapsular type, a total percentage of 94.9 per cent, and although in the majority of the cases a slight limp persisted, "quite a number walked perfectly."

It will appear on the evidence presented that fracture of the neck of the femur may now be treated like other fractures and with relatively the same prospect of success. Yet, according to a leading Treatise on Fractures, "The ideal object of treatment, restoration of form and function, is rarely to be attempted or even sought." If, therefore, the abduction treatment conforms to surgical principles because it is adequate to apply them, it follows that the rules of conventional practice are adapted to the inadequacy of the methods hitherto at command, a conclusion that may be readily confirmed by analysis.

The basis of all forms of treatment in common use is traction on the limb. Occasionally it is applied in suspension or in combination with lateral traction at the hip, but usually, as the so-called Buck's Extension, supplemented by a side splint.

Traction, if properly applied and supervised, is effective for fractures of the shaft of the femur because the tension of the ensheathing muscles aids in aligning the fragments, and

security is soon assured by external callus. At the hip joint, however, the conditions are quite different, since the neck of the femur projects at an angle. Traction therefore can at best appose the fragments in a lateral and unstable relation. Thus, displacement may follow relaxation of tension or on movements of the trunk or limb, and even if it were but partial and temporary, it would probably prevent repair, which in fractures of the small part of the neck proceeds from the cancellous structure, unaided by external callus. This conclusion is supported by the statements of many surgeons, from Cooper to Cotton, that intracapsular fractures practically never unite under routine treatment.

Furthermore, its mechanical ineffectiveness in general is reflected in the axiom, that the deformity of supposed impaction shall not be disturbed, because such fortuitous fixation alone assures the opportunity for repair. Traction, at best inadequate, is unreliable since it is not under single control and, as ordinarily applied and supervised, it is doubtful if it does more than to relieve the symptoms. No provision whatever is made for after care. Thus functional disability, due to uncorrected deformity, is further aggravated by nutritive changes in and about the joint and by muscular contractions due to lack of protection.

The final results, according to common report and as determined by actual investigation, are so extraordinarily bad that they have been accepted as evidence of the futility of treatment rather than as a reflection on its quality. In fact, it is still the general impression that efficiency, as the term is understood in its relation to other fractures, even if it were technically possible, would be undesirable because, aside from the risk involved, it would be useless if the fracture were intracapsular and would lessen the chances of repair if it were impacted at the base of the neck.

Under these conditions local treatment, if applied at all, is usually of the nature of what has been termed a surgical ritual. This point is well illustrated by an analysis of 120 cases of ununited fracture at the hip observed at the Mayo Clinic, in not one of which had there been "really proper treatment" at the time of the injury. (Henderson: *Surgery, Gynecology and Obstetrics*, Feb. 1, 1920.) Perhaps the most reliable statistics of cases actually treated by conventional methods are those of the British Committee of Fractures, the results being classed as good in but 23 per cent of the cases examined, showing in comparison with those of Campbell a balance of 70 per cent in favor of efficiency. The most reasonable explanation of this disparity is that direct contact combined with pressure is essential to union in central fractures and that in those at the base of the

neck correction of deformity by apposing the fractured surfaces promotes repair and favors functional recovery, if protection is assured during the period of reconstruction.

The points that I wish to emphasize in conclusion are these: The abduction treatment is not, as it is often designated, a plaster of Paris method as contrasted with other splints; nor is it a splint method as opposed to traction. Its mechanism is the anatomy of the hip joint, and the limb is fixed in the attitude that makes the internal splinting effective. It is not an alternative to any form of conventional treatment because it is unhampered by the qualifications and restrictions to which they must conform. It is the only method by which the surgical principles that govern the treatment of all other fractures may be consistently applied, and in establishing these principles it must of necessity displace inadequate methods, and in natural sequence the entire structure of accepted teaching and practice of which they are the basis.

Conventional treatment, both in theory and in its practical application, is a pretentious sham, and that it is not more generally recognized as such is a striking illustration of the influence of custom and tradition as opposed to reform.

"We think so, because other people think so,
Or because—or because; after all, we do think so.
Or because we were told so, and think we must think so.
Or because we once thought so, and think we still think so.
Or because having thought so, we think we will think so."

THE VALUE OF POSITION IN THE OPERATIVE TREATMENT OF INGUINAL HERNIA.*

By HENRY H. M. LYLE, M.D.,
NEW YORK CITY.

THE object of this paper is to describe a simple procedure which will be found of value in the treatment of inguinal hernia.

For a moment let us rapidly review the muscular and fascial structures which are directly encountered in the repair of an inguinal hernia. Poupart's ligament, formed from the lowest fibers of the external oblique, passes from the anterior superior spine of the ileum to the spine of the pubes. The ligament is curved, with its concavity downward, due to the attachment of the iliac portion of the fascia lata. The degree

* Read at the Annual Meeting of the Medical Society of the State of New York, at New York City, March 24, 1920.

of curvature and tension of this ligament varies with the position of the limb and body. Extension and eversion of the limb increases the tension; flexion and inversion relaxes it. The fibers of the external oblique and transversalis that unite to form the conjoint tendon arise respectively from the outer half of the outer third of Poupart's ligament. A relaxation of Poupart's ligament automatically loosens the conjoint tendon and results in an approximation of these structures; the relaxation of the conjoint tendon in turn relaxes the related portion of the rectus.

For convenience we will divide hernial operations into two stages: The first stage consists of the dissection, high ligation, and fixation of the sac; the second stage consists of the transplantation of the cord and the repair of the inguinal canal. The stage of dissection requires a position which will give exposure and definition to the parts; the stage of repair a position which gives relaxation and allows approximation of the structures. The dissection is carried on with the patient in the customary dorsal position. On completion of this stage the patient is placed in a position of relaxation with the limb flexed and rotated inward. This relaxes Poupart's ligament and reduces the distance between the ligament and the conjoint tendon. The reduction in distance varies in different patients from 20 per cent to 70 per cent, the average being 35 per cent. The approachment of these parts is further facilitated by raising the head and shoulders of the patient, which relaxes the rectus and the abdominal wall. In the slighter forms of hernia the gap is almost obliterated. In hernial operations done under local anæsthesia this position aids in combating muscular tension.

We have employed this position of muscular balance for ten years. During the last five years we have only found it necessary to perform the transplantation of the rectus once. To insure relaxation during the period of healing the position is maintained for at least seven days.

Not so very long ago it was the custom of a well-known clinic to immobilize their post-operative hernias in plaster spicas. No more barbarous or unphysiological position could be devised; yet one still encounters warm advocates of this folly.

Summary: In order to insure firm union all tension must be avoided. Tight suturing means tissue tension, impairment of nutrition, and the possibility of a replacement fibrosis. In the operative treatment of inguinal hernia this elementary procedure of placing the parts in a position of muscular rest simplifies the closure, aids union and insures a comfortable convalescence.

SOME PROBLEMS ENCOUNTERED IN ATTEMPTING TO APPLY INSURANCE METHODS TO THE SICKNESS HAZARD.*

By E. MacD. STANTON, M.D., F.A.C.S.,
SCHENECTADY, N. Y.

IN the United States less than 3½ per cent of sickness costs are covered by insurance. This is the record as it stands after more than fifty years of normal opportunity for development. The advocates of Compulsory Health Insurance would have us believe that the more than 96½ per cent deficiency should be made good by the mandate of the law. At first glance some of their arguments seem at least partially plausible. However, when after more than fifty years of free opportunity for development an insurance plan shows a record of less than 3½ per cent accomplishment and more than 96½ per cent failure of accomplishment then there must be something wrong with the plan. I believe that it will be well worth the time at our disposal to study some of the reasons for this failure.

The chief reasons for the failure are, I believe, not difficult to ascertain. A study of those forms of insurance which have become almost universal in their application, such, for instance, as fire, life, marine and auto-liability insurance, shows us that all of these forms of insurance comply with certain fundamental requirements. *First*, the events insured against are of relatively infrequent occurrence, and, *second*, the events when they do occur are serious and, as a rule, beyond the ability of the insured to meet their consequences successfully without the aid of the insurance. A community of three or four hundred houses loses on an average only one or two each year by fire. Between the ages of twenty and forty the chances of death per individual per year are only about one in a hundred. Compared with the number of ships that sail the seas shipwrecks are very rare. Considering the number of automobiles in operation accidents with serious personal injury plus liability are relatively infrequent. On the other hand the losses caused by these events when they do occur may be very great and far beyond the normal ability of the insured to meet without the aid of insurance.

The mere fact that certain events when they do occur are liable to cause more or less hardship or that the expenses incurred by them are more or less irregularly distributed is not in itself proof that the insurance method can be successfully applied. Everyone knows and recognizes the advantages of fire insurance and yet I have never heard anyone advocate that the average property owner should attempt to cover by the insurance method the expenses incident to the ordinary wear and tear on his property.

* Read before the Medical Society of the County of Washington, at Hudson Falls, N. Y., October 5, 1920.

Probably every man in this audience who owns his home carries fire insurance, and yet I do not suppose that a single one of you has ever even thought of carrying insurance against the occasional necessity of having to paint your house. There are some very definite reasons why house-repairs insurance has never been developed. In the first place the necessity for such repairs is of frequent occurrence, and insurance covering them would require an enormous amount of detail in its management necessitating correspondingly high overhead costs. In the second place the expenses when they do occur are not beyond the ability of the house owner to meet by other means less wasteful and expensive than the insurance method.

The moment we begin to study the problems of sickness insurance we find that when we attempt to cover by the insurance method the ordinary run of short-duration illnesses we are confronted with an insurance proposition of the house-repairs or house-painting type. Minor repairs are of almost yearly occurrence and so are minor illnesses. The average house needs repainting about once in five years and the average individual suffers a short-duration, incapacitating illness about once in five years. True it is that the incidence of sickness is not evenly distributed, but as I will show you later, the uneven distribution of sickness has mostly to do with the hard-hitting, long-duration illnesses which I believe constitute the insurable portion of the sickness problem.

To illustrate still further the vast difference between fire insurance and sickness insurance of the short-duration illness type let us compare the relative costs of the two. In fire insurance the ratio between cost and protection is for the average risk about \$1 premium per annum for \$300 worth of protection. In the case of favorable risks the \$1 premium per annum will purchase as high as \$600 of protection. The ordinary short-duration illness type of sickness insurance is from *fifty to one hundred* or even more times as costly as fire insurance. One of the best of the short-duration type sickness insurance policies ever offered is that of the General Electric Mutual Benefit Association of the Schenectady works. During the six years ending with 1919 the ratio between premium and protection in this association was \$1 premium per annum for an average protection of \$4.84. Even this insurance cost the holders more than 60 times as much as did their fire insurance. Most other sickness insurance policies which I have studied are even more expensive.

When one can insure a six-thousand-dollar house against loss by fire at a cost of twenty dollars per year, there is no question of the advisability of carrying the insurance. On the other hand if it were to cost \$1,500 per year to insure a \$6,000 building, then almost no one would

carry fire insurance. This is, however, almost the exact ratio between cost and protection as it obtains in the short-duration illness type of sickness insurance.

The reasons for the low insurance value of the short-duration illness type of sickness insurance are not difficult to ascertain. The economic value of insurance decreases as the occurrence against which the insurance is carried becomes more frequent and the distribution more uniform. For illustration, suppose that each individual could count upon being sick once a year for an approximately uniform length of time. Then it would be the height of folly to attempt to carry yearly term sickness insurance, because from the very nature of things the returns from this insurance could only be the amount of the premium paid less the overhead costs of conducting the business. It is because the common run of short-duration illnesses are of relatively frequent occurrence and have a relatively uniform distribution that they do not lend themselves to solution by the insurance method. Out of a group of 1,000 individuals approximately 400 will suffer some form of illness during the year. About 200 members of this group will have one or more weeks of disability due to illness, but of these only about sixty will suffer more than four weeks' disability and only about twenty will suffer more than ten weeks' disability. In the case of the twenty suffering the more than ten weeks' illness and of the sixty suffering more than four weeks' illness there is no question of the desirability of sickness insurance, but to attempt to include along with them the two or three hundred cases of minor non-disabling illnesses or even the one hundred and forty cases of short-duration disabling illnesses is bound to result in an attempt to accomplish something which does not conform with the first fundamental requirements of a successful insurance proposition.

The remarkable uniformity of the distribution of the short-duration illnesses is nowhere better shown than by the data obtained by the United States Department of Labor Statistics. A study by this department of the cost of living in 1,214 workingmen's families in several different localities, showed that 99.3 per cent of these families had sickness expenses during the year. Although 99.3 per cent of the families had sickness expenses during the year the costs were so uniformly divided that while the average cost for medical care was \$44.64 per family per year, only 3.47 per cent of the families had medical expenses amounting to more than \$150 during the year. These figures would lead us to believe that their expenses for medical and dental care were more uniformly distributed than were their house-painting bills. Certainly they were more uniform than were their expenses for motorcycles and Fords.

I believe that every member of the medical profession should keep clearly in mind the true meaning of this data furnished by the United States Department of Labor Statistics. These figures show with unmistakable clearness that as far as the ordinary run of illnesses are concerned there is no more reason for the doctors' bills being paid through an insurance fund than there is for paying the grocery bills by means of grocery insurance. The longer time credits extended for the payment of medical services as compared with the grocery bills more than compensates for the slight irregularity in the family distribution of the medical bills.

There are very good economic reasons why neither the grocers nor the physicians should be handicapped by the losses due to the attempt to apply insurance where insurance methods are not properly applicable. Grocery insurance would mean that a large part of the funds spent for the family food supply would go not to pay the grocer and the producer of the foods but to support the overhead costs of conducting the necessarily very expensive grocery-insurance business. Likewise when doctors' bills are paid from insurance funds much of the money spent for medical expenses goes not for medical attendance but for the overhead costs of conducting this highly complicated form of insurance. In New York State it costs more than forty cents to distribute each dollar in benefits under the relatively simple provisions of the Workmen's Compensation Act. In the case of workmen's compensation this expense is justifiable because of the necessity of charging to industry the costs of the injuries caused by industry. No like reason exists for burdening ordinary illnesses with similar overhead costs.

In the foregoing paragraphs I have outlined very briefly some of the reasons why sickness insurance of the ordinary short-duration illness type has remained a weak sister in the insurance family. In the first place this form of insurance is too expensive. In the second place the short-duration illnesses are not, as a rule, calamities which can not be met equally well by some other more simple and less expensive and wasteful method than the insurance method. However, we must all recognize the fact that sickness is at times a calamity and that there are a certain proportion of illnesses which extend far beyond the reasonable ability of the inflicted individual, or family, to meet successfully without the aid of insurance.

The advocates of Compulsory Health Insurance tell us that out of 1,000 individuals about one half of the total cost of all the sickness of the entire group falls upon about 21 individuals. This is approximately the truth and constitutes a strong argument for a properly developed sickness insurance, but is no argument at all for

the type of pseudo-insurance proposed by the A. A. for L. L. This is because after using the 21 unfortunate individuals for purposes of argument the Compulsory Health Insurance scheme calmly abandons these unfortunates a few weeks after they enter the hard-luck stage of their illness. While I am absolutely opposed to the house-repairs type of sickness insurance which is exemplified in its most extreme type in the so-called insurance scheme proposed by the American Association for Labor Legislation, I nevertheless believe that the insurance method could be applied so as to give protection against the losses caused by the longer duration illnesses.

Take, for instance, the case of tuberculosis, doomed to a sickness not of days but of months, what a wonderful social and economic help it would be if each case of tuberculosis were insured by an insurance plan paying two-thirds wages beginning 2 or 4 weeks after the onset of the illness and extending not for three months or six months as proposed in the Compulsory Health Insurance scheme but until recovery or death. This would be real insurance, the economic and social value of which must be self-evident to every physician.

In order to test the possibilities of developing a type of sickness insurance covering the longer duration illnesses I decided to make the attempt to obtain this type of insurance for myself. I was more successful than I had anticipated and for purposes of illustration I will tell you what I have done in the matter of insuring myself against the possibility of loss by sickness. Take, for instance, the ordinary sickness and accident policies offered by any of the standard companies. These policies pay a stipulated weekly indemnity for fifty-two weeks of illness. There are also certain allowances for doctors' bills, surgical operation, etc. This was not at all the type of protection that I needed. In the first place all of us can finance the first few months of any sickness which we may have. We can collect the old bills due us, or sell a car, or borrow some money. In the second place this insurance stops at the end of a year, which is just about the time that most of us would feel the pinch of a real long-duration illness. In the third place this form of insurance is almost prohibitively expensive. A policy giving \$500 per month protection for 52 weeks' illness would have cost me approximately \$300 per year premium.

I figured that a sickness insurance policy giving the kind of protection that I really needed should protect me beginning six months after the onset of any illness and continuing not a few months or a year but until recovery or death. I applied for such a policy and after some correspondence with the head office of one of the large companies received a special policy paying \$400 per month for any disability due to ac-

cident or illness, the payments beginning six months after the onset of the disability and continuing until recovery or death. The premium for this policy was only sixty-two dollars per year or about one fourth the cost ordinary short-duration illness policy. Later this company got out a standard policy with the benefit payments beginning three months after the onset of the disability and extending until recovery or death. This policy is non-cancellable and the yearly premium at my age was \$79 per year for a policy paying \$500 per month for disability due to any cause. I believe that the premium for new applicants has been raised slightly during the last few months, but several companies are now issuing this type of insurance to selected risks at a rate of about \$18 per year premium for each \$100 per month protection against disability, the payments for the disability beginning three months after the onset of the illness and extending until recovery or death.

It is not the purpose of this paper to advertise any form of sickness insurance policy. What I do want to do is to call your attention to what I believe to be some of the fundamental weaknesses of the type of so-called health insurance proposed by the advocates of Compulsory Health Insurance and to indicate what I believe should be the lines of progress if sickness insurance is some day to take its place as an important factor in solving the problem of the hardships produced by sickness.

The medical profession has been time and time again asked to suggest really constructive changes in the scheme as proposed. The first amendment which I would offer to any health insurance scheme, be it voluntary or compulsory, would be to eliminate all provisions for fund-paid medical services. The medical profession of this country knows that the employed wage-earner is abundantly able to pay the ordinary expenses for medical care. It makes no difference whether he can or can not, neither the patient nor the physician can possibly be benefited by adding the additional handicap of overhead expenses, fraud and red tape known to be inseparable from any scheme of fund-paid medical services. A few years ago, when the Compulsory Health Insurance agitation first began, we did not have at our disposal the statistical data to prove all we knew in a general way to be the real truth in regard to the impracticability of paying doctors' bills out of insurance funds. Today, thanks to the rapidly accumulating data on the subject, there is I believe abundant data to prove to any fair-minded person that the insurance method is not the best method by which to pay the doctors' bills in the ordinary run of illnesses.

As a second fundamental change in the scheme as proposed, I would eliminate from the insurance plan all those non-disabling and short-duration disabling illnesses which by no stretch

of the imagination can be considered to represent financial disasters which can not be borne readily by the individual or the family group. The plan of so-called insurance proposed by the Compulsory Health Insurance advocates actually specializes in this type of illnesses; yet to include them means that we must neglect the long-duration illnesses which most need the insurance, and what is equally bad it means that a large proportion of the funds must be inevitably wasted because of an unnecessarily high administrative expense and because of the premium placed on the over-emphasis of minor ailments. The waiting period should be at least two weeks and in many cases a waiting period of four weeks might be even better, or a waiting period of two weeks, then two weeks of half-rate payments and full benefit payments after the fourth week.

As a third fundamental change I would continue the benefits not for 26 weeks as proposed by the Compulsory Health Insurance advocates but until recovery or death. The studies of the Illinois Commission show that the 26 weeks insurance would eliminate only a very small proportion of the poverty caused by illness. The long-duration illness insurance would eliminate almost all of the poverty due to sickness. As I have already shown, the elimination of the short-duration illnesses and the fund-paid medical services from the insurance scheme would make it readily possible to extend the period of protection so as to include the long-duration illnesses until recovery or death.

That the great commercial insurance companies are beginning to recognize the necessity of the longer duration as compared with the shorter duration sickness insurance is shown not only by the type of long-duration illness policy issued to select risks, which I have already described, but also by the group policy now issued by several companies for factory employees. The policy provides weekly benefits upon proof of total incapacity resulting from sickness or accidental injury. No benefit is payable under the policy for the first seven days of incapacity, nor for the first four weeks of insurance. The benefits are divided into three periods. During the first period of 26 weeks full benefit is paid; during the second period of 234 weeks, or $4\frac{1}{2}$ years, one-half benefit; and during the third period, running to the age of 65, one-quarter benefit. In order to discourage malingering, the weekly benefit, including any other existing insurance or benefits, is limited to two thirds of the average earnings for six months prior to incapacity. Special provisions are made for the amount of benefit to be paid in various cases of recurrence of incapacity. The policy is non-participating.

It will be noted that in this policy they have entirely discarded the idea of paying the doctors out of the insurance fund, and that in place of

this contract medical service they give 4½ years of one-half benefit and after this period one-quarter benefit to age 65. Although I would myself recommend a two weeks' waiting period and a much longer period of full benefit payments, I do heartily approve of the general principle of the group policy as described above and I believe that the medical profession can heartily endorse such insurance which is based on a model fitting American conditions and which is totally different from the European pauper labor model of so-called health insurance proposed by the American Association for Labor Legislation.

AVERAGE COST PER FAMILY FOR DENTAL AND
MEDICAL CARE, AS PER STATISTICS OF
U. S. DEPARTMENT OF LABOR

Average cost per family per year.....	\$44.64	
Total families.....	1,214	
No expense.....	8	0.7%
Less than \$1.00.....	5	
\$ 1.00 to \$ 10.00.....	201	95.8%
11.00 to 20.00.....	201	
21.00 to 30.00.....	193	
31.00 to 40.00.....	154	
41.00 to 50.00.....	122	
51.00 to 75.00.....	157	
76.00 to 100.00.....	85	
101.00 to 150.00.....	54	3.47%
151.00 to 200.00.....	20	
201.00 to 250.00.....	7	
251.00 to 300.00.....	5	
301.00 to 350.00.....	4	
351.00 to 400.00.....	1	
401.00 to 450.00.....	2	
451 and over.....	3	

**REPORT OF THE COMMITTEE ON COM-
PULSORY HEALTH AND WORK-
MEN'S COMPENSATION INSURANCE
OF THE MEDICAL SOCIETY OF THE
COUNTY OF NEW YORK.**

By EDEN V. DELPHEY, M.D.,

NEW YORK CITY.

November 22, 1920.

Your Committee on Compulsory Health and Workmen's Compensation Insurance begs leave to report that during the year it has made a careful study of the subject of, and the Bill presented to the Legislature on, Compulsory Health Insurance; the Workmen's Compensation Insurance in its application to the medical profession, especially that portion relating to oc-

* This Report was ordered printed in the NEW YORK STATE JOURNAL OF MEDICINE, and will come up for action at the regular meeting on December 29th.

cupational diseases, and the freedom of choice of physician by the injured person coming under the provisions of the law; and of the subject of "Health Centres."

On February 26th the chairman sent a letter to the secretaries of all the State Medical Societies in the United States endeavoring to ascertain the sentiment of the members of these various societies on the subject of compulsory health insurance; whether they had instructed their delegates to the A. M. A. on the subject; inquiring their opinion as to the best method of bringing the matter before the A. M. A. for action thereon, and requesting a list of their delegates to the House of Delegates of the A. M. A. He sent a letter to the delegates to the Medical Society of the State of New York calling their attention to the imperative need of taking action on the subject and enclosing the substance of a resolution which he expected to introduce in the House of Delegates of our State Society indicating that it was desirable to instruct our Delegates to the A. M. A. to introduce a resolution in the House of Delegates of the A. M. A. and to support the resolution in every way possible. He also sent a letter to all the delegates to the House of Delegates of the A. M. A. inviting their attention to the propaganda for a scheme which could but have a serious and destructive effect upon the most altruistic profession on the face of the earth—the medical profession—that it would tend to destroy individuality and prevent the proper class of men from entering the profession in the future whereby the entire people would suffer. He is pleased to report that resolutions against the iniquitous scheme for compulsory health insurance were unanimously adopted both by our State Society and by the House of Delegates of the A. M. A.

After a careful study of the subject and conferences with the N. Y. State Industrial Commission, the Committee formulated amendments to the Workmen's Compensation Law, as follows:

**SUGGESTED AMENDMENTS TO THE WORK-
MEN'S COMPENSATION LAW.**

SECTION 13. Treatment and care of injured employees.

The employer shall [promptly] provide for an injured employee such medical, surgical or other attendance and treatment, nurse and hospital service,

medicines, crutches and apparatus as the nature of the injury may require during sixty days after the injury; but the Commission may, where the nature of the injury or the process of recovery requires a longer period of treatment, require the employer to provide the same. [If the employer fail to provide the same, the injured employee may do so at the expense of the employer. The employee shall not be entitled to recover any amount expended by him for such treatment or services unless he shall have requested the employer to furnish the same and the employer shall have refused or neglected to do so.] *An injured employee shall have the right to choose any physician duly licensed to practice medicine in this state to attend and treat him for the injury as hereinbefore provided, subject to the supervision of the Commission.* All fees and other charges for such treatment [and] *services, medicines, crutches and apparatus* shall be subject to regulation by the Commission as provided in section twenty-four of this chapter, and shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living.

Matter in brackets [] to be omitted.
Matter in *italics* is new matter.

WORKMEN'S COMPENSATION LAW.

Amend Section 3, by changing sub-section 7, page 22, Edition of July, 1919, to read as follows:

"Injury" and "personal injury" mean only accidental injuries arising out of and in course of employment, [and] such diseases or infection as may naturally and unavoidably arise therefrom [], and such "*occupational*" diseases as are scheduled under Article 2a.

Matter in brackets [] to be omitted.
Matter in *italics* is new matter.

WORKMEN'S COMPENSATION LAW.

Amend Section 26, by adding after the word "therefrom," Section 26, page 57, 20th line, Edition July, 1919, the following:

Claims for medical services and for services or treatment rendered or supplies furnished pursuant to Section thirteen of this chapter and approved by the Commission in conformity with Section twenty-four hereof, shall constitute the person or persons owning such claim or claims a party in interest hereunder for the purpose of permitting the filing with the County Clerk of the decision of the State Industrial Commission as herein provided, and such person shall to the extent of the amount of his claim so approved by the Commission, be deemed to have all the rights of a judgment creditor in such claim and may enforce his rights thereto with the same effect as though the judgment stood of record in his name and for his benefit.

Matter in brackets [] to be omitted.
Matter in *italics* is new matter.

The Committee is of the opinion that the Occupational Diseases Amendment to the Workmen's Compensation Law is a corollary to the law itself, and that if the medical profession were properly protected in its rights and privileges as provided for in our suggested amendments, the enactment of some such an addition to the Workmen's Compensation Law should be approved.

The Sage-Machold Health Centres Bill was thoroughly studied by your Committee, and in order that we might come to a just and proper

conclusion as to its merits, we sent out circular letters to all the delegates to the State Society, outside of New York City, and to all the secretaries of the County Societies, proposing a series of questions and requesting replies thereto. The result is as follows:

TABULATION OF REPLIES IN RESPONSE TO CIRCULAR LETTER REGARDING "HEALTH CENTRES."

1. Are the people as well cared for medically in the rural as in the urban districts of the State? *Ans.*—Yes, 18; no, 20.
- 2a. Is the number of physicians greater or less in the rural districts than formerly? *Ans.*—Greater, 6; about the same, 1; less, 23.
- 2b. Do the people at large notice and complain of it? *Ans.*—Yes, 16; no, 15.
- 3a. Owing to improved transportation by automobiles, trolleys, etc., do the physicians more easily reach the sick in the rural districts? *Ans.*—Yes, 29; in summer, yes—in winter, no, 8.
- 3b. Do the laity more easily reach the hospitals in the larger cities? *Ans.*—Yes, 33; in summer, yes—in winter, no, 5.
4. If the number of physicians in your county is proportionally decreased, is it
 - a. Because the rural physicians are moving to the cities and towns? *Ans.*—Yes, 15; no change in the number of physicians, 3.
 - b. Because the number of recent graduates going to country is less? *Ans.*—Yes, 23; no, 4.
 - c. Because the number of physicians in the whole United States is smaller in proportion to the number of the population than formerly? *Ans.*—Yes, 8; emphatically yes, 1; questionable, 3.
5. If there is any such change in recent years between the proportion of physicians to the population in the rural districts, how much is due to
 - a. The question of fees and sufficient compensation to permit of a proper mode of living? *Ans.*—A great deal, 14; none, 9; questionable, 4.
 - b. Imperfect laws regarding the collection of fees? *Ans.*—Yes, 7; emphatically yes, 2; questionable, 6; none, 9.
 - c. The advent of new cults? *Ans.*—Yes, 4; questionable, 2; none, 11.
6. Is the lessened ratio of physicians to the general population due to any extent to greater incentives in other callings? *Ans.*—Yes, 19; emphatically yes, 1; questionable, 2; no, 8.
- 7a. Is there a hospital in your neighborhood? *Ans.*—Yes, 31; no, 6.
- b. How many in your county? *Ans.*—In all the replies received, 97; average 2½.
- c. Do they have the respect and confidence of all the elements of the community? *Ans.*—Yes, 28; questionable, 1.
- d. In other words, do the well-to-do and the poor both patronize them? *Ans.*—Yes, 24.
- dd. Do those who can do so, go to the hospitals in the larger cities? *Ans.*—Yes, 3; sometimes, 3; no, 2.
- 8* Have you a dispensary in your neighborhood? *Ans.*—Yes, 22; no, 15.
- ** How many in your county? *Ans.*—In all the replies received, 35; average, about three-quarters of one dispensary.
 - a. Are they patronized only by the poor and needy? *Ans.*—Yes, 16; no, 4.

- b. Are the really poor and needy crowded out by those who can well afford to pay for medical care and treatment? *Ans.*—Yes, 1; no, 16.
- c. Do the poor as well as the well-to-do prefer to have their own physician attend and treat them for their illnesses whether they can afford to pay or not? *Ans.*—Yes, 25.
- 9a. Have you clinical laboratories in your county? *Ans.*—Yes, 22; no, 14.
- b. Are they capably and efficiently conducted? *Ans.*—Yes, 17; questionable, 2.
- c. Are they patronized only by the physicians? *Ans.*—Yes, 17; or
- cc. Are they mainly used by the commercial interests? *Ans.*—Yes, 6; no, 2.
10. What in your opinion are the conditions, professionally, economic, or relating to the public health, which make desirable such legislation as the Sage-Machold Health Centres Bill which failed of enactment last winter? If there are any other facts which you think should be placed before this committee, we shall be glad to have you write us fully regarding them. *Ans.*—In favor of Health Centres, 3; questionable, 2; no, 15; emphatically no, 4.

The Committee therefore recommends that the Society take measures to have the suggested amendments to the Workmen's Compensation Law introduced into the next session of the Legislature.

The Committee recommends that the Society take measures to oppose any and all further Health Insurance Bills.

The Committee recommends that the Society oppose the scheme for "Health Centres," as our survey indicates that it is not needed; that the people in the rural districts are, as a whole, as well cared for medically as are the people as a whole in the cities; that the general medical care is adequate now; that both the poor and the well-to-do prefer to have their own physician attend and care for them in their illnesses whether they can afford to pay for it or not; that the medical profession will in the future, as it has always done in the past, look after the poor and needy in the times of medical need and distress; and that there is no real need for a scheme which will have for its effect the production of a large number of offices to be scrambled for by both political parties with its attendant graft and neglect of those for whom the plan is supposed to provide an improved medical care.

The Committee respectfully requests that those portions of the report which refer to the amendments to the Workmen's Compensation Law, and to the "Health Centres" be postponed until the December meeting of this Society, and that they be published in the December number of the NEW YORK STATE JOURNAL OF MEDICINE in order that members may have the subject before them for study and consideration before being called on to decide what their action shall be.

Section on Eye, Ear, Nose and Throat.

SECOND REQUEST FOR PAPERS.

If you did not see our invitation to co-operate by reading papers or giving clinics before the Oto-Rhino-Laryngological Section at the Brooklyn meeting, to be held during May, 1921, please be reminded now that we are especially anxious to make this the best meeting ever held. Everybody is earnestly requested to send in a title and an abstract, if possible, so that a tentative program can be made up before January 1st. Men who have never favored the Society with a contribution of any sort are especially urged to do so this year.

ALBERT C. SNELL, *Chairman.*

IRVING WILSON VOORHEES, *Secretary,*
13 Central Park West.

Correspondence.

441 West 44th Street

November 22, 1920

Dr. Edward Livingston Hunt,
Secretary, Medical Society, State of New York.

Dear Sir:

I see that the New York State Medical Society is going on record as favoring the annual registration of physicians. As a member of your society I wish to oppose any such legislative stupidity. The legitimate practitioner is quite sufficiently handicapped by burdensome and inefficient legislative measures such as the Harrison Act, which makes it difficult to prescribe narcotics for the relief of pain, and permits the peddler to reap his harvest unmolested, the Volstead Act which places the physician in the category of a potential liquor dealer, etc.

If the State would properly enforce the present Medical Practice Act, it would not need such a stupid additional act as your society is favoring, to drive out illegal practitioners. Pick up the "Red Book," which any telephone subscriber has. In it you will find listed 212 Christian Science Healers, 151 Chiropractors, and 126 Osteopaths. All these are guilty of violating our present Medical Practice Act, and registering the legitimate physicians will not help to get rid of these "birds," by any conceivable means. The Medical Society would be imitating the ostrich. Furthermore, what good will registration do in the case of practitioners who are graduates of recognized medical schools, and who are duly licensed by the State, but are prostituting their profession by performing abortions or by treating venereal diseases in illegitimate manners, telling a patient he has syphilis when he has not, stringing cases out as long as a patient's money lasts, advertising in toilets and by hand-bills or booklets, and in the foreign newspapers?

I see "Old Doctor Grindle," "Old Doctor Gray," Dr. Egan, Dr. Bryan, Dr. Wharton, Dr. Flippen, and Dr. Robert J. Kahn are still at large, and preying upon the public. Undoubtedly these estimable gentlemen will all be able to register annually, under your proposed legislation. Will you please let me know, either through the STATE MEDICAL JOURNAL, or direct, what earthly good your proposed act can accomplish?

Very truly yours,

LUCIUS F. HERZ.

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BROOKLYN'S PLANS FOR THE STATE CONVENTION.

THE committee on arrangements are planning to make the convention at Brooklyn the biggest and best in the history of the State Society. The convention meets the first week in May and is inaugurated by the house of delegates on Monday, May 2d. For Brooklyn, however, there will be inaugurated "Health Week," beginning Sunday, May 1st, which will be known as "Health Sunday." Through the courtesy and kindly cooperation of the Brooklyn clergy a "health talk" will be given in the churches and Sunday schools, with special reference to "The Cancer Problem," "The Tuberculosis Problem," "The Venereal Problem," and "Child Welfare."

We are fortunate in securing for the use of the convention the Twenty-third Regiment Armory, situated on Bedford avenue, directly opposite the Kings County Medical Society's Library Building. With these two buildings so ideally located, there is insured adequate and appropriate accommodations for facilitating the work of delegates, committees, sections and exhibitors.

The large floor space of the Twenty-third Regiment Armory lends itself to a scientific and health exhibit of rare possibilities, while the officers' quarters and company rooms provide adequate facilities for the various section meetings. All the activities of the convention will be concentrated in one centre and thus add to the comfort and convenience of our guests.

The "convention centre" will be rendered easily accessible to out-of-town visitors by a line of "convention busses" running from the termination of the subway to the convention headquarters.

One of the most attractive features of the convention will be the scientific and health exhibit which will occupy the entire floor of the main drill hall of the armory. In addition to the usual display of the latest books, instruments and apparatus of special interest to physicians, there will be a health exhibit featuring those things which directly pertain to the health of the individual, the family, the community. Health talks illustrated by cinema pictures will help to enhance the educational value of the exhibit.

In order to insure the comfort of our guests a cafeteria lunch will be served in the armory from twelve to three o'clock.

The entertainment committee is making special provision for the entertainment of visiting ladies.

Remember, the first week in May!
Brooklyn expects you!

WILLIAM FRANCIS CAMPBELL,
Chairman Committee on Arrangements.

ANIMAL EXPERIMENTATION.

YOUR Committee on Medical Research, aided by the State Department of Health, the Department of Higher Education, and representatives from the Rockefeller Institute, and the medical colleges of the City and State of New York, have made yearly pilgrimages to the hearings on the Boylan bills, of one or other kind, intended to hamper or eliminate animal experimentation in research work. Up to the present time it has not been a difficult task to convince the legislators that the proposed measures were contrary to the best interests of public health and the science of medicine.

According to press reports, the late General R. C. Hawkins has bequeathed \$100,000 to be used to aid in the passage of laws preventing animal experimentation. While the use of this money will not lessen the weight of our appeal in a righteous cause, it nevertheless becomes absolutely necessary for every physician to use his best efforts with every member of the Legislature known to him, to prevent the enactment of any law interfering with progress in the science and art of medicine.

In this connection the following reprint of an editorial which appeared in *The Sun* of recent date is noteworthy and well worth careful perusal:

"It is impossible to avoid a feeling of mortified regret over the announcement that the late General R. C. Hawkins has left \$100,000 to finance a fight against animal experiment in the cure of disease, commonly but erroneously called 'vivisection.' When the enormous good that such a sum might do if used in the cause of humanity is considered, it is most disappointing that it should be misdirected through a mistake of judgment in blocking progress in the alleviation of suffering. Nobody will question the benevolent desire of General Hawkins, but every well-balanced person who has given any attention to the subject knows that the balance of good in modern scientific methods of physiological and pathological study leaves the incidental injury caused to a few animals negligible.

The late Dr. S. Weir Mitchell said once, upon visiting an anti-vivisectionist display in Philadelphia: 'Your exhibit is not quite complete—you should place here a dead baby and there a dead guinea pig, with the motto: "Choose between them!"' This states the truth of the matter in three words. The choice is between lower animal suffering and human suffering—animal life and human life—not to speak of the fact that an enormous amount of suffering, sickness and death has been saved to hundreds of thousands of animals, also, by the sacrifice of a few.

In the *Forum* for November, Dr. S. Dana Hubbard has an article on 'What Vivisection Has Done,' in which he casts up the balance sheet with a convincing array of facts. He names twenty-six great steps in medicine which have saved uncountable lives and inestimable pain, disability and economic loss. None of these would have been possible without experimentation on the living subject. The choice was between experimenting on man on the one hand or rats and guinea pigs on the other. In the one heroic case, indeed, that of yellow fever, the trial was made with a man and the loss of a supremely useful mind and spirit was the bitter price. But in such matters as antisepsis, surgery

of the brain, heart, internal organs, in malaria, diphtheria, cerebro-spinal meningitis, tuberculosis, typhoid, sleeping sickness, the social plague—these are only a few instances—inferior animals have served as working material, and stupendous results have been reached through their use.

Actual surgical work is by no means general in these experiments. It can be applied, indeed, only in a limited range or research; by far the greater part of the work is experiment with drugs and vaccines. Much of it involves no pain and hardly any inconvenience to the subject treated. Granting—and it is a very crude assumption—that in the past there may have been some indifference to the sufferings of the animals experimented on, there is certainly no wanton or unnecessary pain or injury inflicted today. It is recognized as a condition of useful results that all elements of harm not essential to the inquiry must be eliminated. Doctors are by nature and profession humane, but, over and above their sentiments, scientific accuracy controls their action in this matter.

It cannot be argued that the time when these experiments were necessary has passed. On the contrary, the vast accumulating mass of knowledge of the secrets of disease, the steadily growing array of means of prevention and cure of disease draw science on with commanding power. There are great immediate problems to be faced. There is cancer, there is typhoid, there are the subtle forms of physiological progression, commonly called aging; there are a hundred fruitful fields of possibility for the prolongation of life and the reduction of its miseries.

Is science going to abandon these, to desert the cause of future generations in compliance with an exaggerated sentiment? Will the world abandon the crusade against the plague-bearing, wealth-destroying rats? Will it stop killing animals for food? It is not likely. Nor is it likely that the health of the future will be sacrificed. All experimentalists are willing to give guarantees that the necessary evils of the process shall be minimized, but the cause of civilization will not permit the abandonment of one of its most fertile and promising instrumentalities.

HEALTH INSURANCE.

A SURVEY of the medical journals published by the societies of most of the states of the Union offers a clear understanding of the uniform opposition of the medical profession to health insurance by legislative enactment or other laws proposing the socialization of medicine in any form. The reasons cited which lead to this opinion are usually similar; there is no little bitterness in the attacks on the proponents of these laws, and no misunderstanding possible in the forceful language of the resolutions adopted by most if not all of the state medical societies in opposition to such measures. There has never been a proposed act which has met with such outspoken universal antagonism on the part of the profession.

Among the arguments used are those relative to the success or the failure of similar laws now in operation overseas, notably in England and Germany. These disclose a wide diversity of opinion and it is apparent that this rests largely on the source of the information on which such conclusions are based. At the meeting of the Michigan State Medical Society

of this year this was explained in detail in so far as observations made in Germany were concerned. The large body of officials supervising the working of the law are unlimited in praise of it. The panel physician favors it if his income from that source is satisfactory. The balance of the profession favor or condemn it according to how it influences their personal practice and income. Inquiry concerning the desirability of the health insurance law in England resulted about as follows: The officials administering the act admit that improvements are needed, but unhesitatingly claim that it is of much benefit to the people. The panel physician, as in Germany, favors it to the extent of his success in the work. Medical school professors, other scientific workers, public health officials and some prominent physicians, who have no direct contact with the working of the law, thoroughly believe in it in theory, but admit that much improvement is necessary before it can be considered a complete success. There remains an intelligent class of physicians, chiefly prominent surgeons and specialists, who do not work under the law, but who have constant opportunity to observe the efficiency of panel practice. Many of these men are loud in their protest against the hurried, superficial and inefficient services rendered patients by many panel doctors. They claim that better attention is secured at a free dispensary and that in consequence there has been no decrease in dispensary cases since health insurance went into effect. It is said to be a common experience to have patients admit that they prefer the free clinic treatment to the attendance of the panel doctor at home.

A RESEARCH INFORMATION BUREAU.

THE National Research Council has established a Research Information Service as a general clearing-house and informational bureau for scientific and industrial research. This "Service" on request supplies information concerning research problems, progress, laboratories, equipment, methods, publications, personnel, funds, etc.

Ordinarily inquiries are answered without charge. When this is impossible because of unusual difficulty in securing information, the inquirer is notified and supplied with an estimate of cost.

Much of the information assembled by this bureau is published promptly in the *Bulletin* or the *Reprint and Circular Series* of the National Research Council, but the purpose is to maintain complete up-to-date files in the general office of the Council.

Requests for information should be addressed, Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Deaths.

BRONK, EDMUND FRANKLIN, Amsterdam, Albany Medical College, 1884; Fellow American Medical Association, member State Society; attending physician Amsterdam City and St. Mary's Hospitals. Died November 2, 1920.

CHASE, WALTER B., Brooklyn; Bowdoin Medical College, 1867; Fellow American Medical Association, American College of Surgeons, member State Society; Ex-President Second District Branch, Medical Society, County of Kings and American Gynecological Society; Consulting Gynecologist Nassau and Jamaica Hospitals. Died November 15, 1920, of cerebral arterio-sclerosis.

GERE, JAMES BELDEN, New York City, Bellevue Medical College, 1896; member State Society and New York Academy of Medicine, Director Pathological Laboratory, Neurological Institute. Died suddenly November 18, 1920.

KNAPP, MARK I., New York City; New York University, 1894; Fellow American Medical Association, member State Society. Died November 25, 1920.

PERKINS, A. THOMAS, South Otselic; Buffalo Medical College, 1891; member State Society. Died November 2, 1920.

PRATT, JOHN FRANK, Binghamton; Buffalo Medical College, 1878; member State Society and Buffalo Academy of Medicine. Died November 3, 1920.

SCHLITZ, FRANCIS A., Brooklyn; New York University, 1878; Fellow American Medical Association, member State Society. Died November 29, 1920.

THOMAS, CORNELIA WHITE, Rochester; Syracuse Medical College, 1895; Fellow American Medical Association, member State Society and Buffalo Academy of Medicine. Died October 22, 1920.

District Branches.

THIRD DISTRICT BRANCH

FOURTEENTH ANNUAL MEETING, HUDSON, N. Y.
THURSDAY, OCTOBER 14, 1920

The meeting was called to order in the Cavell House, Dr. Luther Emerick, presiding. In the absence of the Secretary, Dr. Odell, Dr. Frank L. Eastman was elected Secretary *pro tem*. The reading of the minutes was dispensed with. Address of welcome by Dr. George W. Vedder, of Philmont.

The following officers were elected: President, Dr. Arthur J. Bedell, Albany; First Vice-President, Dr. Charles P. McCabe, Greenville; Second Vice-President, Dr. Roscoe C. Waterbury, Kinderhook; Secretary, Dr. Clark G. Rossman, Hudson; Treasurer, Dr. Frank L. Eastman, Kingston.

Dr. Rooney moved that the business meeting of the morning reconvene at the close of the Scientific Session. Carried.

Dr. Emerick, President, reported that he had visited each Society in the Branch each year, and suggested that County Secretaries send notices of regular meetings to the President of the Branch.

A fine dinner was then served. The Columbia County Medical Society acting as host.

SCIENTIFIC SESSION

"Some Notions of a Country Doctor," Luther Emerick, M.D., Saugerties.

"The Future Physician," Richard Kevin, M.D., President of the State Medical Society.

"The Necessity of an Annual Registration," Augustus S. Downing, Assistant Commissioner, State Department of Education.

"The Present Status of Medical Practice in the United States with Special Reference to New York State," M. Edgar Rose, M.D., Director Division of Child Hygiene, State Department of Health.

"Sequelae of Encephalitis Lethargica," Edward Livingston Hunt, M.D., Secretary, State Medical Society.

"Indications for Mastoidectomy and Operative Procedure upon the Tonsils," Eugene E. Hinman, M.D., Instructor, Laryngology and Rhinology, Albany Med. College.

Discussed by Dr. Frank B. Wheeler.

BUSINESS SESSION—Continued

Dr. Rooney moved a standing vote of thanks to Dr. Emerick for his splendid paper and also for the fine work done by him during his three years as President of the Branch. Carried.

Moved that a copy of Dr. Emerick's address be sent to the NEW YORK STATE JOURNAL OF MEDICINE, *The Journal of the American Medical Association* and *The Albany Annals*. Carried.

Moved that a standing vote of thanks be given to the Medical Society of the County of Columbia, to the ladies for their fine dinner and to all the men who contributed to the program. Carried.

Dr. Rooney moved that the Branch favor the amendment to the Medical Practice Law for annual registration. Seconded and carried.

Dr. Rooney moved that the Third District Branch shall elect two members to consult with Dr. Biggs, Commissioner of Health, in regard to the proposed Health Centre Bill, and that each County Society shall elect also two members to act on this conference committee. Seconded and carried.

It was distinctly understood that our entering this conference with Dr. Biggs did not include our sanction of this proposed bill as we were opposed to it as now written.

Drs. Clark G. Rossman, Hudson, and Charles P. McCabe, Greenville, were elected as the two members of Conference Committee. The committee to meet at the call of Dr. Biggs, State Commissioner of Health.

Motion to adjourn was seconded and carried.

FOURTH DISTRICT BRANCH

MEETING, SARATOGA SPRINGS, TUESDAY, SEPTEMBER 7, 1920.

MORNING SESSION

The meeting was called to order at 10 A. M., and the following officers were elected: President, Edwin MacD. Stanton, Schenectady; First Vice-President, John R. Ross, Dannemora; Second Vice-President, William U. Taylor, Mooers; Secretary, Charles W. Woodall, Schenectady; Treasurer, Frank J. Sherman, Ballston Spa.

SCIENTIFIC SESSION

"The State Society: What of Its Future?" J. Richard Kevin, M.D., President, Medical Society of the State of New York, Brooklyn.

"Practical Side of the Saratoga Mineral Waters," Douglas C. Moriarta, M.D., Saratoga.

"Diagnostic Value of X-Ray in Medicine and Surgery," illustrated with lantern slides, Clarence A. MacMinn, M.D., Schenectady.

"The Significance of Extra Beats in Regard to the Mechanism of the Heart," illustrated, Carl R. Comstock, M.D., Saratoga.

Following Dr. Comstock's paper, the members assembled at the Newman Lake House for dinner, where they were entertained by the Medical Society of the County of Saratoga.

AFTERNOON SESSION

"Botulinus Poisoning, Report of 32 Cases," Julius B. Ransom, M.D., Dannemora.

"Acute Purulent Conditions in the Thorax," Cassius D. Silver, M.D., Plattsburg.

SIXTH DISTRICT BRANCH

ANNUAL MEETING, HORNELL, TUESDAY, OCTOBER 5, 1920

The meeting was called to order at 11 A. M., in the Court House, Dr. Leon M. Kysor, President, presiding. Fifty-four doctors were present.

The minutes of the Owego meeting were read and accepted as read.

A letter from Dr. Hunt, Secretary, Medical Society of the State of New York, was read by the President, stating that according to the State Constitution the officers could not be changed every year, and a motion was made and carried that the resolution of last year in regard to change in the By-Laws be withdrawn and laid on the table indefinitely.

A telegram was received and read, stating that Dr. Hunt, Secretary of the State Society, was unable to be present and take part in the meeting.

Moved and carried that the President's address be laid on the table until after dinner.

Moved to adjourn to the County Club House for Dinner.

AFTERNOON SESSION, 2 P. M.

The resignation of Dr. Willetts Wilson as Second Vice-President was moved, seconded and carried, that it be accepted.

Moved and carried that Dr. Edward L. Bull be elected Second Vice-President in Dr. Wilson's place.

An invitation from Dr. John M. Quirk of Watkins, to meet at the Glens Springs Sanitarium next year was unanimously accepted.

SCIENTIFIC SESSION

President's address—"What is the Future of the Medical Profession?" Leon M. Kysor, M.D., Hornell.

"The State Society," J. Richard Kevin, M.D., President, Medical Society of the State of New York, Brooklyn.

"Health Education in the Schools," F. H. Howe, M. D., Albany.

Symposium on Cardio-Vascular-Renal Disease, "Angina-Pectoris," With Report of Many Cases, Including Three Doctors in Hornell, James E. Walker, M.D., Hornell.

"Arteriosclerosis, and its Relation to the Etiology of the Disease," N. Philip Norman, M.D., New York City.

"Diagnosis and Interpretation of Renal Disease," with fifteen specimens presented, John R. Williams, M.D., Rochester.

"Rectal Conditions of Special Interest to the General Practitioner. Essentials in the Treatment of Fistula in Anal Region," with lantern slides. Descum C. McKenney, M.D., Buffalo.

"Blood Pressure in Relation to Pelvic Pathology," Ross G. Loop, M.D., Elmira.

Discussions by Dr. Tinker, Ithaca, and Dr. Kinney, Wellsville.

"Treatment of Compound Fractures with Special Reference to Wound Excision" (with lantern slides), Martin B. Tinker, M.D., Ithaca.

Discussions by Drs. Loop and Reese.

County Societies

MEDICAL SOCIETY OF THE COUNTY OF JEFFERSON

ANNUAL MEETING, WATERTOWN, TUESDAY,
NOVEMBER 9, 1920

The meeting was called to order in the Black River Valley Club. There was a record attendance.

The following officers were elected: President, George B. Van Doren, Watertown; Vice-President, Frederick G. Metzger, Carthage; Secretary, Murray MacG. Gardner, Watertown; Treasurer, Andrew H. Allen, Watertown; Delegate to State Society, James F. McCaw, Watertown.

The following members were elected: Drs. Louis J. Hartman and Francis J. Lawler.

The President appointed the following Committee on Economics to draft a resolution on the Health Centre Bill and to send a delegate to the Committee on Medical Economics of the State Society: James F. McCaw, Chairman, Gilbert D. Gregor and C. N. Bibbins.

After an adjournment for dinner the meeting reconvened and the following papers were read:

President's address: "The Health Centre Bill," Elbridge G. Minar, M.D., Mansville.

Discussion opened by Frederick W. Sears, M.D., Syracuse.

"Idiopathic Peritonitis," Grant C. Madill, M.D., Ogdensburg.

Discussion opened by Frederic R. Calkins, M.D., Watertown.

"The Eye as an Aid in Diagnosis," Walter S. Atkinson, M.D., Watertown.

Discussion opened by Gilbert D. Gregor, M.D., Watertown.

THE MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND

QUARTERLY MEETING, THIELLS, WEDNESDAY,
SEPTEMBER 29, 1920

The meeting was called to order at Letchworth Village; 31 members and guests were present.

"Clinics in Mental Deficiency" were given by Dr. Little, Superintendent of Letchworth Village, assisted by Drs. Storrs and Jones.

A practical demonstration of the "Terman" test for mental deficiency was given by Miss Taylor, psychologist.

Applications for membership were received from Drs. J. L. Sly, George M. Richards, and K. B. Jones.

Voted to send a suitable floral gift to Dr. E. B. Laird of Haverstraw, with the Society's sincere wishes for the speedy recovery of his health.

Following the meeting a delicious supper was served on the lawn, Dr. Little acting as host.

THE SCHOHARIE COUNTY MEDICAL SOCIETY

ANNUAL MEETING, COBLESKILL, N. Y., TUESDAY,
NOVEMBER 9, 1920

The following officers were elected for 1921: President, Howard B. Bartholomew, Cobleskill; Vice-President, Mace A. Losee, Livingstonville; Secretary, Herbert L. Odell, Sharon Springs; Treasurer, LeRoy Becker, Cobleskill; Censor, Willard T. Rivenburgh, Middleburg; Delegate to State Society, Herbert L. Odell, Sharon Springs; Alternate, Christopher S. Best, Middleburg; Committee on Legislation, Lyman Driesbach, Chairman, Middleburg; LeRoy Becker, David W. Beard, Adam Y. Myers; Delegates to Confer with Commissioner Biggs on the Health Centre Bill, Lyman Driesbach, E. S. Persons. The delegates were granted power of substitution.

SCIENTIFIC SESSION

"Revision of the Medical Practice Act," by Arthur J. Bedell, M.D., Albany, President-Elect, Third District Branch. Discussion followed.

On special request Dr. Bedell also gave a talk on "Eye Redness and Its Import," and also some points for the early diagnosis of "Glaucoma."

A vote of thanks was accorded Dr. Bedell for his interesting addresses.

Moved, seconded and carried, "That we favor Annual Registration for Doctors, but disapprove of the Health Centre Bill, as now framed."

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN

ANNUAL MEETING, MALONE, N. Y., TUESDAY,
NOVEMBER 9, 1920

The Comitia Minora met at 11:45 A. M.

The business session was called to order in the Elk's Club at 12:30 by the President, Dr. Blanchet. The following visitors were present: Drs. J. Appleton Nutter, Montreal; T. Avery Rogers, Plattsburg; Councillor Fourth District Branch; J. J. Robinson, Plattsburg, and Lester Adams, Trudeau.

The minutes of the last meeting and the report of the Comitia Minora were read and approved as read.

The election of officers being next in order, it was moved, seconded and carried that the Secretary cast one ballot for the candidates nominated at the last Semi-annual meeting.

The vote being cast, the President declared the following officers elected for the year 1921: President, John E. White, M.D., Malone; Vice-President, Edward N. Packard, M.D., Saranac Lake; Secretary-Treasurer, George M. Abbott, M.D., Saranac Lake; Censor for three years, John W. Kissane, M.D., Malone; Alternate to State Society, Frank F. Finney, M.D., Burke.

Dr. John N. Goode was elected to membership.

The reports of the Secretary and Treasurer were read and on vote duly seconded and carried were accepted as read. The Treasurer reported that the income from County dues were not sufficient to pay the running expenses, that there would be a deficit at the end of the year unless some means were taken to replenish the treasury. After considerable discussion it was moved, seconded and carried that the Society levy an assessment of one dollar upon each and every member of the Society to be paid before January 1, 1921.

The following amendment to our By-Laws relating to dues was then offered:

That in Section 1, Chapter 10, the word *two* in the second line of the Section be changed to word *three*, making the section read: Each member shall pay annually the sum of three dollars on the first day of January, etc.

A communication from Dr. H. L. Winter, Chairman, Committee on Medical Economics of the State Society was read and discussed. Dr. Winter called for an expression of opinion in regard to the Health Centre Bill, which was before the State Legislature last year. It was the opinion of the meeting that a Committee be appointed to take the matter up. The President appointed the following Committee: Drs. Aloney L. Rust, Chairman, Edward N. Packard, and John W. Kissane.

The meeting then adjourned for dinner.

SCIENTIFIC SESSION, 2:30 P. M.

President's annual address: "Neglected Fields in the Practice of Medicine," Sidney F. Blanchet, M.D., Saranac Lake.

Discussions by Drs. Nutter, White, Packard and Kissane.

"Sciatica from an Orthopedic Standpoint," J. Appleton Nutter, M.D., Montreal.

"The Treatment of Congenital Syphilis in the New Born," John W. Kissane, M.D., Malone.

MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER

ANNUAL MEETING, WHITE PLAINS, TUESDAY,
NOVEMBER 16, 1920

The business session was called to order at three o'clock in the Orthopedic Hospital. The following officers were elected for the ensuing year:

President, William H. Purdy, M.D., Mt. Vernon; Vice-President, Francis R. Lyman, M.D., Hastings; Secretary, Harrison Betts, M.D., Yonkers; Treasurer, Walter W. Mott, M.D., White Plains. Censors: Clarence C. Guion, M.D., New Rochelle; Elton G. Littell, M.D., Yonkers; John F. Black, M.D., White Plains. Delegates to State Society: Chauncey V. Umsted, M.D., Yonkers; Edwin G. Ramsdell, M.D., White Plains.

The following were elected to membership: Drs. Barnett P. Stivelman, Robert Reid, César P. McClendon, Morgan O. Barrett, and C. Layton Weitz.

SCIENTIFIC SESSION

Symposium on "Focal Infection."

From the Standpoint of Surgery and Biology, John W. Draper, M.D., New York City.

From the Standpoint of Surgical Physiology, with Special Reference to Colonic Infection, Jerome M. Lynch, M.D., New York City.

From the Standpoint of the Diagnostician with Special Reference to Group Medicine, George R. Satterlee, M.D., New York City.

From the Standpoint of Head Surgery, with Special Reference to Sinus Infection Without Local Symptoms, Edward S. Pope, M.D., New York City.

From the Standpoint of Preventive Psychiatry, Henry A. Cotton, M.D., New York City.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

PRACTICAL PREVENTIVE MEDICINE. By MARK F. BOYD, M.D., C.P.H., Prof. Bacteriology and Preventive Medicine, Medical Department, University Texas. Octavo 352 pages; 135 illustrations. Philadelphia and London. W. B. Saunders, 1920. Cloth, \$4.00 net.

LABORATORY MANUAL OF THE TECHNIC OF BASAL METABOLIC RATE DETERMINATIONS. By WALTER M. BOOTHBY and IRENE SANDIFORD, Ph. D. Section on Clinical Metabolism. Mayo Clinic, Rochester, Minn., and Mayo Foundation, University Minnesota. Octavo, 117 pages; 11 Tables, Charts of explanation. Philadelphia and London. W. B. Saunders Co., 1920. Cloth, \$5.00 net.

LES ANTIGENES ET LES ANTICORPS. M. NICOLLE, Caracteres Generaux Applications Diagnostiques et Therapeutiques. Masson et Cie, Editeurs 120, Bd. Saint-Germain, Paris. 1920. 4 fr. 50 net.

LE DIABETE SUCRE. Dr. MARCEL LABBE, Etudes Cliniques, Physiologiques et Therapeutiques. Masson et Cie, Editeurs, 120, Br. Saint-Germain, Paris. 20 fr. net.

COLUMBIA UNIVERSITY BULLETIN OF INFORMATION. Annual report of the President and Treasurer to the Trustees. With accompanying Documents for the year ending June 30, 1919. Published by Columbia University, New York City, 1920.

CATALOGO DE LA COLECCION DE TESIS, 1827-1917. I. Cronologico. II. Alfabetico. III. Metodico. IV. Analitico. Buenos Aires, Tallerfs Graficos A. Flaiban, 1918.

HOOKWORM AND MALARIA RESEARCH IN MALAYA, JAVA AND THE FIJI ISLANDS. Report of Uncinariasis Commission to the Orient, 1915-1917. By S. T. DARLING, M.D., M. A. BARBER, Ph.D., and H. P. HACKER, M.D. Published by the Rockefeller Foundation, International Health Board, New York City.

1919 COLLECTED PAPERS OF THE MAYO CLINIC, Rochester, Minn. Octavo of 1,331 pages, 490 illustrations. Philadelphia and London: W. B. Saunders Company. Cloth, \$12.00 net.

HISTORY AND BIBLIOGRAPHY OF ANATOMIC ILLUSTRATION, IN ITS RELATION TO ANATOMIC SCIENCE AND THE GRAPHIC ARTS. By LUDWIG CHOULANT. Translated and edited by MORTIMER FRANK, B.S., M.D. Published by the University of Chicago Press, Chicago, Ill. Price, \$10.00 net.

THE ENDOCRINES. By SAMUEL WYLLIS BANDLER, M.D., F.A.C.S., Professor of Gynecology in the New York Post-Graduate School and Hospital. Octavo of 486 pages. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, \$7.00 net.

PSYCHOPATHOLOGY. By EDWARD J. KEMPF, M.D., 87 illustrations. Published by C. V. Mosby Company, St. Louis, Mo. Price, \$9.50.

HYGIENE OF COMMUNICABLE DISEASES. A Handbook for Sanitarians, Medical Officers of the Army and Navy, and General Practitioners. By FRANCIS M. MUNSON, M.D. Illustrated. Published by Paul B. Hoeber, New York City. Price, \$5.50.

THEOPHRASTUS BOMBASTUS VON HOHENHEIM. Called Paracelsus. His Personality and Influence as Physician, Chemist and Reformer. By JOHN MAXSON STILLMAN. Published by the Open Court Publishing Company, Chicago and London. Price, \$2.00.

Book Reviews

SURGICAL SHOCK AND THE SHOCKLESS OPERATION THROUGH ANOCI-ASSOCIATION. By GEORGE W. CRILE, M.D., Prof. Surgery; and WILLIAM E. LOWER, M. D., Asso. Prof. Genito-Urinary Surgery School of Medicine, Western Reserve Univ., Cleveland, Second Edition of "Anoci-Association," Revised and Rewritten. Octavo, 272 pages, 75 illustrations. Phila. and London. W. B. Saunders Co., 1920. Cloth, \$5.00 net.

The second edition of this well-known volume contains 272 pages.

It augments the first edition with experience accumulated in civilian practice and in the military clinics of the American Expeditionary Forces in the late war.

The observation of a large number of wounded suffering from shock and various causes has given Dr. Crile an excellent opportunity to add to this already valuable contribution to American Surgery.

Anoci-Association is of proven value and is a necessity in our treatment of Handicapped Surgical Patients—its principles and applications have undoubtedly saved many lives, especially in France.

The technique of application remains unchanged except with a few minor improvements. Chapter VI—"Shock and Exhaustion, Anociation, and Restoration in Military Surgery" is a new chapter adding much to our pre-war knowledge.

Chapters on Anesthesia, Blood Transfusion, Post-operative Morbidity and the Handicapped Surgical Patient, are still of much practical value to the operating surgeon.

The value of anociation in general surgery, its theory and application, consume the remainder of the volume.

The original investigations and laboratory observations, contained in the volume, continues to be one of the most valuable contributions to Surgery of the last decade.

Whether the reader is in accord with the teachings of Dr. Crile or not, it is a definite fact, that the prog-

ress of Surgery of the future will be along Physiological development; just as progress of the past has been in the application, first of Anatomy and later, of Pathology to the principles of Surgery.

This is distinctly a volume of the future.

S. P. BARTLEY.

HUMAN PARASITOLOGY, WITH NOTES ON BACTERIOLOGY, MYCOLOGY, LABORATORY, DIAGNOSIS, HEMATOLOGY AND SEROLOGY. By DAMASO RIVAS, B.S., Biol., M.S., M.D., Ph.D. Octavo, 715 pages, 422 illustrations, 18 plates. Phila. and London, W. B. Saunders Co., 1920. Cloth. \$8.00.

This book, following a brief history of parasitology, and a somewhat general chapter upon the nature of parasites, contains 187 pages upon the Protozoa and 348 pages upon the Metazoa. Then follows a chapter upon the parasitic fungi of man. In the appendix are included superficial chapters upon Macroscopy and Microscopy; Bacteriology; Mycology; Protozoölogy and Hematology and Serology.

The appearance of this work evidences the increasing recognition and growing importance which the subject of Parasitology is receiving in medical circles and in our medical schools. It is valuable in that it adds to the literature of parasitology the first comprehensive work by an American author which should stimulate greater interest in this branch of medical science. A rather good feature of the volume is the reference list at the end of each chapter. In this connection, however, is to be noted a not infrequent tendency to mention original work of authors for which no reference is given. The illustrations are numerous and good.

WADE W. OLIVER.

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY. By R. B. H. GRADWOHL, M.D., Director Gradwohl Laboratories, Chicago and St. Louis. Director Pasteur Institute of St. Louis and A. J. BLAIVAS, formerly asst. in chemical laboratory, St. Luke's Hosp., New York. Second Edition. 75 illustrations. Four colored plates. St. Louis, C. B. Mosby Co., 1920.

The present edition of this work has been revised, somewhat enlarged and considerable new matter added. In Part I, devoted to blood chemistry, practically the only new feature is a description of Bloor's method of estimating liquids. In Part II the authors give descriptions of the Duboscq and Bock-Benedict colorimeters as well as of the old Hellige. Part III has been considerably enlarged, the authors bringing their discussion of the interpretation of blood findings as completely up to date as possible. They also have a chapter on basal metabolism, giving the methods used in making these studies and the present known significance of the findings. The last chapter gives in detail Folin and Wu's latest methods of blood analysis.

E. B. SMITH.

CARE AND FEEDING OF INFANTS AND CHILDREN. By WALTER REEVE RAMSEY, M.D. A Text-Book for Trained Nurses. 123 illustrations. Second Edition, Revised. Phila. and London, J. B. Lippincott Co., 1920. Price, \$2.50 net.

This is a practical and comprehensive text-book for nurses on the care and feeding of infants and children, written by the author in an endeavor to "meet the increasing demand for a broader education along the lines of preventive medicine." He has succeeded in including in this small book a wealth of information which will enable any nurse to handle her cases more intelligently after having read it. An attempt has been made to bring this second edition up to date by re-writing the chapter on child welfare and by other additions and changes in the other chapters. Unfortunately such recent aids to diagnosis and treatment as intrasinus puncture, intraperitoneal injections, hypodermoclysis in acidosis, the value of the Schick reaction in the fight against diphtheria and the aid given by the

pertussis vaccine against whooping cough are not mentioned. The book is written in a simple and readable style, the illustrations very clear and the book well bound.

M. B. GORDON.

X-RAY OBSERVATIONS FOR FOREIGN BODIES AND THEIR LOCALIZATION. By Captain HAROLD C. GAGE, A.R.C., O.I.P., Consulting Radiographer American Red Cross Hospital of Paris; Radiographer in Charge Military Hospital, V. R. 76, Ris Orangis and Complimentary Hospitals. St. Louis, C. V. Mosby Co., 1920. Price, \$1.75.

Rarely is the time-honored quotation "It's an ill wind that blows nobody good" more apropos than when applied to the little manuscript of Captain Harold C. Gage, written after four years of remarkable experience in the localization of foreign bodies during the recent war.

This little book, well written and amply illustrated with drawings and photographs, will stand as an ideal and most complete treatise on foreign body localization. The author describes in detail the various methods of locating foreign substances, covering the entire body, mentioning the pitfalls for error and fully emphasizing the ever important necessity for accuracy and care in technic.

The importance of employment of the central vertical beam is beautifully and concisely described, a point often overlooked by those of lesser experience. Cryptoscopic localization is well discussed and the various geometric, anatomic, stereoscopic, as well as the old less scientific antero-posterior and lateral localizations are explained.

The treatise in reality deals with a specialty within a specialty, thoroughly developed during the recent war and places the X-ray in an indispensable position in dealing with localization of opaque foreign substances.

A short but important space is given to the use of bromide paper, relatively little used, but if understood properly of extreme value in the office of the roentgenographer.

The monograph is well written and deserving of the highest recommendation.

MILTON G. WASCH.

DISEASES OF CHILDREN. Presented in 200 Case Histories of Actual Patients Selected to Illustrate the Diagnosis, Prognosis and Treatment of the Diseases of Infancy and Childhood. Introductory on Normal Development and Physical Examination of Infants and Children. By JOHN LOVETT MORSE, A.M., M.D. Third Edition. W. M. Leonard, Publisher. Boston, 1920.

Since the first edition of this book in 1911 it has been gradually improved and broadened until in this third edition thorough revision has been accomplished with the addition of much raw material and new methods of diagnosis and treatment. The entire section on the gastro-enteric tract has been re-written. Among the other new things are a blood pressure table, cases illustrating indigestion from excess of different food elements, new material on whooping cough, with case showing value of vaccine treatment, experience in diabetes mellitus, pneumococcus meningitis, infantile paralysis and many others.

As in former editions the type is distinct, and the subject matter is so arranged as to make it easy reading. The illustrations are good, and most of them are from original sources, which adds to the value of the book.

The method of case histories followed is the most valuable in bringing home the differential diagnosis and treatment. It is to be remarked, however, that none of the diagnoses are confirmed by autopsy, and that, of course always makes the diagnosis a matter of doubt. With the addition of autopsies, and the comparison of the autopsy findings with the clinical diagnosis, the value of the work would be greatly enhanced.

ARCHIBALD D. SMITH.

PLASTIC SURGERY OF THE FACE. Based on Selected Cases of War Injuries of the Face, Including Burns. Original Illustrations. By H. D. GILLIES, C.B.E., F.R.C.S., Major R.A.M.C. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York, 1920. Price, \$15.00.

The material upon which this book is founded represents studies which commenced in 1916 at the Cambridge Hospital, Aldershot, under the direction of Colonel Sir W. Arbuthnot Lane. Here war injuries of the face and jaw were segregated. The importance of studying intensively this branch of reconstructive surgery was recognized early. The scope of the work was increased and the special hospital removed to Sidcup. Major Gillies inaugurated the work at Aldershot and continued later at Sidcup. He was largely responsible for the rapid progress in this form of surgery during the war.

Although plastic surgery is not a new development and has been practiced in civilized and some uncivilized countries for many years it remained for the late war to evolve methods of repair which this catastrophe occasioned. In this connection will always be remembered the work of Major Gillies. American surgeons in 1918 arrived at Sidcup with Colonel V. P. Blair of our own medical corps. Here these men, with their English colleagues, worked out problems to their mutual advantage.

The eight chapters are outlined as follows: Principles, Historical, Repair of the Cheek, Injuries of the Lower Lip, Upper Lip, Chin, Nose and Pinna, the Region of the Eyes, including Burns of the Face. Prosthetic Appliance in Relation to Plastic Surgery are written by Captain W. Kelsey Fry, M.C., R.A.M.C. Plastic Surgery in Civil Cases concludes the work.

Mechanically the work is a beautiful example of the bookmaker's art. Illustrations are diagrams and photographs from pastel drawings. This form of surgery requires for accurate record many plaster casts. This work was well done by Lieutenant J. Edwards.

War studies of plastic surgery have proved a tremendous stimulus, and, as a result, there is a tendency on the part of those men who participated in this work during the World War to specialize in this particular branch of reconstructive surgery. There is much of this work to be done in civil life, and the skill engendered by war surgery is now being applied to disfigurements received under civil conditions. There is a vast field for this work. This particular book will prove invaluable to general surgeon and plastic specialist.

R. H. FOWLER.

DISEASES OF THE INTESTINES AND LOWER ALIMENTARY TRACT. By ANTHONY BASSLER, M.D. 154 text engravings; 62 full-page half-tone plates (over 70 figures), some in colors. F. A. Davis Co., Philadelphia, 1920. Price, \$7.00 net.

The first edition of this book is a clear and comprehensive treatise on diseases of the intestine and lower alimentary tract. It not only thoroughly reviews the subject but also presents to the profession the author's original ideas and experience in this field of medicine.

It begins with a brief description of the anatomy and physiology and then takes up, in minute detail, every branch of the subject. Matter still wholly in the experimental state has been prudently omitted.

The book is well illustrated, containing numerous Roentgenograms representing both normal and pathological states of the intestine. The author emphasizes the great diagnostic importance of a careful X-ray examination, but at the same time cautions the physician not to depend upon this method of diagnosis alone. He believes that the majority of mistakes made in the diagnosis of abdominal conditions are due to this error.

The chapters on intestinal toxemia are excellent. In them are described the various types, etiological factors, symptoms and treatment of this condition and its

relation to other diseases. The author's description is so clear and thorough that he places this branch of the subject, about which so much confusion and skepticism exist, on a sound and scientific basis.

In the chapter on appendicitis, reference is made to the frequent disappointments following appendectomies for the relief of chronic digestive symptoms. He states that this would occur less frequently if the physician would remember that in those cases other pathological conditions often exist which are also responsible for the symptoms. This fact is not fully appreciated by the profession.

As the subject matter is well classified and full of practical hints, this book of Dr. Bassler is admirably adapted both for the use of students and practitioners.

ANTHONY A. RUTZ.

THE AMERICAN RED CROSS IN THE GREAT WAR. By HENRY P. DAVISON, Chairman of the War Council of the American Red Cross. Published by the Macmillan Co., New York, 1920.

This book is written by Henry P. Davison, who was Chairman of the War Council of the American Red Cross during the active period of the war.

The book describes the various activities in which this wonderful organization participated. Part I details the work done by the millions of members at home. A very interesting chapter is that on supplies and transportation from which one realizes the vast quantities of supplies needed as supplementary to the regular governmental supplies, and the great system of transportation necessary to carry on the work. Part 2 describes the work as performed in the various countries in Europe.

To one who is not familiar with activities on such a large scale as performed by the Red Cross, this book is a revelation. It is a volume which everyone should have as a reminder of the part we took during this war period, for there is not one of us who did not contribute time, money or both to the Red Cross at that time.

A. E. S.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY, FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By RUSSELL BURTON-OPITZ, M.D., Ph.D., Asso. Prof. Physiology, Columbia University, New York City. Octavo 238 pages; 123 illustrations. Philadelphia and London: W. B. Saunders Co. 1920. Cloth, \$4.00 net.

A close approach to the scientific method of teaching constitutes a very important feature of these lessons. The student is encouraged to observe closely in order to obtain primal data and then to reason so as to combine these facts and develop a logical story.

Forty lessons are given in this work, the scope of which is sufficiently large to make it of value as a guide in the most elaborate, medical school laboratory course. Beginning with experiments in muscle and nerve, blood, heart, circulation, respiration, nerve system, sense organs, digestion, absorption and excretion, respectively, are treated with considerable detail.

The style is simple and the directions clear, thus making the reading pleasing and the subject matter easily grasped.

To make the work accord completely with the ideal scientific method of teaching, it might be urged that those few annotations which detail the results to be obtained from previously described experiments, be omitted.

H. KOSTER.

SELF-HEALTH IS A HABIT. By EUSTACE MILES, M.A. Published by E. P. Dutton & Co., New York. 1919. Price, \$2.50.

The book is written for the laity and is filled with valuable suggestions in personal hygiene. The question of mental attitude as a factor influencing health is ably discussed. Few medical men will agree with the author's dietetic instructions, which are revolutionary.

The literary style is poor; the personal pronoun "I" occurs too frequently.

E. H. M.

THE SURGICAL CLINICS OF CHICAGO. Published Bi-Monthly by W. B. Saunders Company, Philadelphia and London. Price per year, \$12.00. Vol. 4, No. 2, April, 1920. Vol. 4, No. 3, June, 1920. Vol. 4, No. 4, August, 1920.

The April *Surgical Clinics* is an unusually instructive member. Among the outstanding articles are Carcinoma of the Splenic Flexure—Technique; Imperforate Anus—Technique; Fracture of the Malar Bone—Technique; Sub-Diaphragmatic Abscess—Diagnosis and Technique; Ovarian Cyst—Differential Diagnosis; Ectopic Pregnancy—Diagnosis and Treatment; Umbilical Hernia in a Baby Eight Hours Old, in which case whisky-sugar anesthesia was used.

The June number gives considerable space to nose, throat and ear cases. Empyema is discussed at length, and there are articles on obstetrics, gynecology, genitourinary, stomach and gall-bladder.

The August number contains a well-written article on Tumors of the Face. The articles on Acute Pancreatitis and Treatment of Bow-Legs and Knock Knees by Osteoclasia deserve special mention. Numerous abdominal conditions are described with technique.

Dr. Roy L. Moodie, Department of Anatomy, University of Illinois, has in each of the above numbers monographs on Primitive Surgery in Ancient Egypt; The Antiquity of Pott's Disease and Other Spinal Lesions, with Primitive Treatment; The Use of the Cautey Among Neolithic and Later Primitive People.

HARRY R. TARBOX.

STUDIES IN NEUROLOGY. By HENRY HEAD, M.D., F.R.S., in conjunction with W. H. R. RIVERS, M.D., F.R.S.; GORDON HOLMES, M.D., C.M.G.; JAMES SHERREN, F.R.C.S.; THEODORE THOMPSON, M.D.; GEORGE RIDDOCH, M.D. Two Volumes. Henry Frowde, Hodder & Stoughton, London, Eng., and Oxford University Press, New York. 1920. Price, \$17.00.

This work of two volumes contains a series of researches into the physiology of the nervous system based on clinical observations. Each section of the work forms the subject of a separate communication published at various times in "Brain," but they have been rearranged so as to comprise an orderly sequence extending from the peripheral nervous system to the receptive centers of the cortex. The material presented here is the net result of about eighteen years of work by Henry Head and his collaborators. Although the major portion of the book is already familiar to every neurologist through the previous publication of its separate chapters, still we have here a most valuable collection of wonderfully painstaking researches by a master mind.

The keynote of Head's work is his doctrine of the division of the afferent mechanism of the peripheral nerves into three systems, deep sensibility, the protopathic system and the epicritic system. 1. By deep sensibility he refers to the response to the stimulus of pressure and to the movement of joints, tendons and muscles. 2. The protopathic system, capable of responding to painful, cutaneous stimuli and to the more extreme degrees of heat and cold. Its end-organs are grouped in points on the surface of the body, sensitive to only one of these stimuli. Their response is diffuse and unaccompanied by any definite appreciation of the locality of the spot stimulated. 3. The epicritic system. To the impulse of this system we owe the power of cutaneous localization, of discriminating two points and of recognizing the fine grade of temperature called cool and warm.

The first volume deals with the sensation of the peripheral nerves and includes an interesting study in nerve division on the arm of the writer. The second volume treats of the grouping of the sensory paths in the cord, bladder disturbances and the phenomena of excessive sweating in cord injuries; sensory disturbances from cerebral lesions and cortical sensation. For anyone interested in the study of sensation, this masterpiece can be unhesitatingly recommended as probably the finest thing of its kind ever published.

FEMINISM AND SELF-EXTINCTION. By ARABELLA KENEALY, L.R.C.P. (Dublin). E. P. Dutton & Co., New York. 1920. Price, \$5.00.

To be a woman, but not, anyway, a he-woman, is the burden of Dr. Kenealy's plea. Masculine women and effeminate men are similar anomalies: a female human being ought to be a woman, but many degenerate into an ultra-woman or a feminist. God's best creation is homo—a man, a woman; each the complement of the other. When either one, consciously or unconsciously, is prostituted from its prototype and is transformed into the likeness of the other, be it voluntarily or under duress, Nature has her revenge by aborting glorious possibilities of sex-evolution. So the author warns, exhorts, pleads and threatens in a way which combines robust language with delicate phrasing, virile speech with feminine appeal, strength with grace, causticity with charm, invective with gentle suggestion. The argument is two-fold. The first book, of 78 pages, deals with woman's part in human evolution; the other, 230 pages, is occupied with an array of figures, facts and fancies showing the part which feminism plays in human decadence, which must surely bring the blush to any not utterly unprincipled feminist. The spectre of unsexed womanhood is such a forbidding one to the author that she can hardly find room for shades of thought. She adds to the conventional view of woman's sphere of activities an imposing array of biologic argument, pertinent references to biography, and citations from every-day knowledge to form a striking "stop, look, listen" sign. Yet the argument though buttressed by many scientific and other authorities, appears to be hurled against a woman of straw manipulated by Pankhursts and Schreiners in semblance to life. The ordinary man does not recognize the form, it is so monstrously grotesque. Yet if there is such a being wilfully seeking a pre-eminent place in human activity, and disdainfully leaving to mere woman the duty of responding to biologic demands; or if, as the author believes, there is an undoubted and progressive trend to such ends now unmistakably manifesting itself, there is much need for hard thinking about these matters. Dr. Kenealy's intimate knowledge of English and Continental conditions has inspired Cassandraic warnings which are likely to fall lightly upon American ears. We pride ourselves upon better relations between man and woman. The old-world folk do not understand our comradeship which leaves our women less cause to misshape their lives. It will take some courage to read the book through. Page 103 is a good starting place. If one will browse along to the discussion of the difference between male and female sex-instincts, in Chapter V, the next one hundred pages may be omitted to enjoy the picture in Chapter X of the impending subjection of man. It will be time then to turn to page one and read the book all through.

HYGIENE, DENTAL AND GENERAL. By CLAIR ELSMERE TURNER. With Chapters on Dental Hygiene and Oral Prophylaxis. By WILLIAM RICE. C. V. Mosby Co., St. Louis, Mo. 1920. Price, \$4.00.

This work is unique in that it is a text-book designed for dental students, but giving consideration to the broader aspects of general hygiene in a manner as thorough as possible in a volume of its size.

Particular attention is, of course, given to the subjects of dental hygiene and oral prophylaxis, but no phase of the subject of hygiene and sanitation is omitted. The chapters on Public Health Administration and School Hygiene deserve particular mention.

The only adverse criticism to be made is that the author has attempted to cover too much ground in a small volume. The work would be better if some subjects were omitted and others elaborated more extensively.

To the purposes designed, however, that is, as a text-book on dental and general hygiene for dental students, the book is admirably adapted.

E. H. M.

NOTE.—Original articles are indexed under subjects in *italics*. Other abbreviations are as follows: Editorials (E); New Books (B). For list of authors see page 408.

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